

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

FOREIGN MINING AND METALLURGY.

The Society of Commerce has fixed its next periodical sale of Banca tin at 114,637 ingots at the close of October, 1872. The visible supply of Banca tin in Holland at the close of October was 22,653 ingots, compared with 23,800 ingots at the close of October, 1872. The current price of Banca tin in Holland at the close of October was 72½ fl., as compared with 92 fl. at the close of October, 1872. At Rotterdam, Drontheim has been quoted at 50 fl. to 51 fl. Russian Crown at 51 fl. The last quotation for Banca tin in London was 72½ fl.; and Billiton ditto, 72½ fl. The quotation for lead, delivered at Paris, has been 24½ s.; and for Spanish lead, delivered at Havre, 24½ s. per ton. At Marseilles, lead in sauer fusion, has made 23½ s. to 24½ s. per ton; second fusion 24½ s. per ton. Silesian zinc, delivered at Havre, has brought 28½ s. per ton; other good marks, delivered at Havre, 28½ s. per ton. Vieille Montagne zinc has been quoted in Belgium at 34½ s. per ton; the closing quotation at Marseilles has been 35½ s. per ton, with a fall of 3 per cent. to consumers.

There are great hopes of a revival in the French iron trade, but at the state of affairs is not very brilliant. Prices have not yet risen, of course, some demand for iron, but this demand is greatly declined. It is difficult to imagine how a temporary slackening of activity in industrial affairs could have led to the extinction of so many blast-furnaces and the stopping of rolling-mills. There have been a few small transactions in pig-iron, but there has been scarcely anything passing in re-iron. Quotations range between 4½ s. and 4½ s. per ton in the Marne, and 4½ s. and 4½ s. per ton in the Meurthe-et-Moselle. It does not appear to be very well established. Merchants' prices are almost as much neglected as pig; quotations range 10½ s. and 11½ s. per ton. At Paris first-class merchants' prices have been dealt in at 11½ s. per ton. Rails and plates have a more favourable position upon the French markets. This is the case with rails, thanks to some rather important contracts concluded at the commencement of the season. A contract for large plates has been concluded at 16½ s. per ton at the Machine iron has been well maintained. No. 20, coke-iron has been dealt in between 12½ s. and 13½ s. per ton. In the Loire the iron market appears tolerably active. Upon the whole, there is not much alarm in the French iron trade; it is undoubtedly at present, but confident hopes are entertained in the future. The Liverdon Forges Company will pay a dividend for the first half of 1873 at the rate of 12½ s. The Fives-Lille Company has announced a dividend for the first half of 1873 at the rate of 12½ s. per share; of this dividend 12½ s. per share will be distributed in coin Nov. 3, and 14½ s. per share will be paid in cash. The balance of 12½ s. per share will be paid in cash of the company, bearing interest from Jan. 1, 1874. The Mines Company will pay to-day (Saturday) a dividend of 12½ s.

There has been a notable slackening in the French coal trade; being formed at the pits' mouths, and in the warehouses. Coal owners also display a desire to sell, and are with that object, serious concessions in regard to prices. At what the coal trade had hoped for and expected. Some felt at this sudden check in affairs at a usually favourable time, all the more alarm is felt since it is thought that the present rests on a weak foundation. In the basin of the Nord, daily at Lille, coal is stated to have been offered by one mine at 10½ s. per ton below the official quotation. Paris, which usually tolerably well the state of affairs, exhibits now a rather serious depression in coal—at least, among speculators. Stocks are accumulating, and deliveries are small, as well by railway water. It is not surprising, perhaps, that the market has been undecided for two months past, should still maintain its position; producers will, probably, make a final effort when the rigours of the season, but a reduction in price is inevitable. In the basin of the Loire the demand is active, and is hardening, while stocks are almost nil. This condition is, however, restricted to the comparatively narrow Loire basin. The hope is gaining ground, taking France as a whole, that the price of coal is returning to a normal level in the country.

It does not appear to be any serious change in the aspect of the iron trade, and it is difficult to see how metallurgical industry can revive with a continuance of the causes which have led to its present condition. It is not sufficient that the price of coke leaves a little more latitude to the pig-iron trade. It is necessary that the conversion of pig into iron should be made with some profit, and that iron should be restored to its former ordinary applications by selling again at more moderate prices. It is necessary, also, that a fall in iron should coincide with a fall in coal, as there are few industries consuming one material which do not consume the other. Refining pig meets a slow market at 4½ s. per ton; casting pig remains rather neglected, at 6½ s. per ton. Merchants' iron maintains its price, but comparatively little business passing in it. Rails have been the subject of some transactions, and the special rolling-mills do not work. The plate-mills have also some orders, but they are not sufficient to employ this branch of the national industry if the works were not reduced to a state of idleness. The imports of pig and iron into Belgium have increased to the extent of 100,000 tons to 125,000 tons. The whole of the increase in this year's figures occurred in the imports from England. The imports of August presented a diminution, as compared with those of 1872. The expansion observable in the imports from

Great Britain occurred in rough pig and rails. On the other hand, the exports of iron from Belgium declined from 192,000 tons in the first eight months of 1872 to 162,000 tons in the first eight months of 1873; the decline in the exports occurred especially to England and the Low Countries. In August Belgium only exported 16,000 tons of iron of various descriptions, against 25,000 in August, 1872.

Coal quotations have not varied in Belgium, but the demand has become less active; such may be said to be the budget of the week. Stocks are beginning to accumulate, deliveries are less numerous, and railway rolling stock no longer makes default. The temporary dullness in the trade is attributed to the uncertainty in political events in France and the continuance of comparatively fine weather. Supplies were also laid in with some activity during the summer and autumn, and this circumstance has of course had a tendency to increase the existing dullness. At Charleroi the coal trade is beginning to complain of a scarcity of orders, prices remain, however, apparently firm. At Mons industrial coal has been feeble; only coal for domestic purposes is purchased with any firmness; prices have remained without any variation. At Liège there has been the same state of affairs and the same tendency in business. Everywhere the coal trade presents, however, some heaviness. The imports of coal into Belgium amounted in the first eight months of this year to 404,000 tons, as compared with 125,000 tons in the corresponding period of 1872. August figured in these two totals for 57,000 tons and 15,000 tons respectively. The increase in the imports has referred wholly to coal obtained from the Zollverein, 224,000 tons more Ruhr coal having been imported into Belgium in the first eight months of this year than in the corresponding period of 1872. The imports of English coal into Belgium increased to the extent of 38,000 tons in the first eight months of this year, and those of French coal increased to the extent of 1400 tons. The imports of coke into Belgium also increased in the first eight months of this year to 20,700 tons, as compared with 4500 tons in the corresponding period of 1872. The exports of coal from Belgium declined from 3,000,000 tons in the first eight months of 1872 to 2,800,000 tons in the first eight months of 1873. The exports of Belgian coal to the Low Countries alone presented a falling off of 135,000 tons to August 31 this year. The exports of Belgian coal in August amounted to 345,000 tons, as compared with 401,000 tons in August, 1872. On the other hand, the exports of coke from Belgium have increased this year, having amounted to 585,000 tons to Aug. 31, as compared with 510,000 tons in the corresponding period of 1872. These statistics seem to show that Belgium has largely suffered as regards its foreign coal connection from the excessively high prices which have prevailed for coal in Belgium.

ROCK-BORING MACHINES.

SIR,—I have noticed a good deal of correspondence carried on lately in the Journal about the numerous Rock-Borers now in use. I have been one of the first users of the "Burleigh," and having kept a strict account of the cost of working the drill, and speed attained with it, as compared with hand labour, the results may interest some of your readers. I do not intend to enter into any controversy with your correspondents, or to criticise their remarks, but briefly to state facts as to the working of the drill at the Cambrian Quarries, of which I have the management.

The Burleigh Rock Drill, jumper size, has been working daily at these quarries since March, 1872. The machine is fixed and worked on the ordinary telescopic-legged stand, and the boring is done in open face of the galleries and top rock. The drill points are shaped like the letter X. The motive-power is obtained from the boiler of a steam-engine situated on the brink of the quarry, which is used for raising the rock from the lower galleries. The steam is conveyed in iron pipes 1½ inch in diameter, and are laid out into each gallery with a branch and tap leading to the face of the rock here and there. The machine has given every satisfaction, and with the exception of new piston rings, and some trifling repairs by the blacksmith at the works, no breakage of any kind has taken place, and the machine now appears little the worse for the work it has done.

From calculations made in May last a comparison shows that the work of untopping the slate rock has been done in about two-thirds of the time required by manual labour. The depth of the holes bored was about 8 ft., and the cost was found to be 5½ d. per foot, the same being about 24 per cent. under the cost of manual labour. Another important point is the increased rate of progress.

Llanberis, Nov. 12.

JOHN MENZIES.

ROCK-BORING MACHINERY.

SIR,—In all the rock-drills which I have yet seen the great obstacle to their satisfactory working is the valve by which the feed and exhaust is regulated, and even in the latest drill noticed this is not entirely overcome. In this respect the Dubois-François drill is probably the best, but it is nevertheless rather complicated, and has the disadvantage of a great number of parts. I saw it working excellently in Belgium, but I have always noticed that delicate and complicated machines fare much better in the hands of Frenchmen of the working class than with the same class in England, and I, therefore, think that for use in this country the Dubois-François drill might be simplified without interfering with its efficiency. Yet in its present form the drill is undoubtedly a good one, and several of the objections which have been urged against it are really quite imaginary. For instance, it has been said that because in some other drills difficulty is experienced in keeping the piston properly packed, therefore the fact of the Dubois-François having several pistons must cause extra difficulties; but this is not so, because, because the absolutely accurate packing of the pistons which work the slide-valve is not necessary, even if the loose packing does not prevent wear and tear. But even if accurate packing were necessary, the inconvenience of attention to the pistons would be more than compensated by the advantage of the absence of shock at each end of the stroke. Upon the whole, I think I think I should be inclined to adopt the Dubois-François machine even in its present form, and I believe that in a very short time.

But that which I think there is more need for than any of these steam or power drills is a really good hand-drill—an instrument that can be supplied for 40s. or 50s., and capable of being worked by one man, and of performing (say) twice or thrice the work that can be done with the ordinary jumper and sledge. The machine of Abegg

and Richards was about the best I have seen, but it lacked the means of fixing so as to keep it properly up to its work—a want that could be very easily supplied. Next to this was the Villepique perforator, which had an ingenious arrangement for making the machine suit itself to rocks of different degrees of hardness. A combination of these two machines would probably come somewhere near perfection, and such a combination would, I think, be quite patentable. It is, perhaps, a disadvantage that all hand-machines must be on the abrasive principle, the adoption of the percussive system necessarily involving the use of steam or compressed air, but for the drilling of coal, killas, and similar soft rocks, the machines I have mentioned appear to work tolerably well, and to be capable of improvements which will make them of real practical value.

Nov. 11.

PRACTICAL MINING—SUGGESTIONS TO AGENTS.

SIR,—I have carefully read over most of Mr. Ennor's effusions in the Journal from time to time, but can draw from them little or no information. He appears to be always writing in the same groove as ourselves—that is, seeking information, but at the same time putting himself forward as not only the miner's Mentor but the authority to teach our Government-paid chemists and geologists—aye, that is the grand ultimatum, Government appointments! But Mr. Ennor is too late in the day. I sometimes contrast the papers, lectures, and essays contributed to the Journal and other mining literature by those men Mr. Ennor desires to teach—Smyth, Taylor, Collins, Foster, and numerous other worthy and able men, as their works testify, published in the "Transactions" of the Cornwall Geological Society, Royal Cornwall Polytechnic Society, Royal School of Mines, and, not least, the Cornwall and Devon Miners' Association. Why is it Mr. Ennor has never favoured the latter association with a paper, that it may be ventilated by men whom he seeks to improve? then some good might accrue from his advice and novel ideas. Why does Mr. Ennor concentrate all this abuse on the metalliferous miner, and notably the Cornish miner? Why not explain to the Northern miners and colliers their short-comings—surely they require a little teaching also? I have noticed the most prominent subjects now before the metalliferous miner have not been dealt with by Mr. Ennor—how to provide a cheaper means of unwatering our mines; the high price of coal, and its remedy; the introduction and maintenance of machine-boring; the general use of dynamite; cheaper transit for the ores from the forehead to the surface; the full power to be got from the Trevithick or Cornish boiler, and consequent economy of fuel, and safety, without the introduction of feed-water heaters; the use of hydraulic machinery, and the storage of water; the general use of stone-breakers, and pneumatic steam stamping, or Californian revolving stamping apparatus; a better method of letting contracts to men, whereby they shall not be restricted in the amount they may earn, but the one great end always kept in view—speed in the development of the mine. Why not publish his book, instead of promising to supply us with a panacea for every evil mining is now labouring under? Then we may hope to get a solution to this tangled mass of interrogations which is put before the readers of the Journal every week. I am of opinion most of Mr. Ennor's questions are such "as no fellow can find out, and we are very anxious that the solutions to the problems may be in the printer's hands before our Mentor drops off, which surely cannot be an event very far distant, when we take the natural span of an ordinary man's existence.

I would suggest, seeing no one can even offer an opinion on the many questions Mr. Ennor puts, that he will write (say) six letters, like the famous Mr. Paffard, of Emma renown, and, finding no one can reply, answer the whole himself in another six letters. Perhaps the answers to the interrogations might invoke more discussion than the questions themselves, and this lot of articles now appearing would be far more useful than those preceding them on mining machinery. I turn back, and see the long letters on the new old idea of stamps, and large talk of commencement in the spring, when we have plenty of daylight, &c., and laying out extensive floors, and patent machinery; but, after many enquiries, I am compelled to believe that this promise, like the rest, is not destined to be fulfilled.

Perhaps it may not be out of place to ask a few questions of our mining men in the cause of real progress, but of a different nature—that is, the questions that may be solved. If some of the members of the Miners' Association would kindly answer them in your valuable Journal they would be doing mining a good service. I will jot down a few at random that offer occupy my thoughts. Is there a machine safer, stronger, or rather more durable, than the present Cornish pumping-engine for unwatering our deep mines? Is there a safer, more economical, or durable steam-generator better adapted for use in the metalliferous mines than the Trevithick Cornish boiler? Admitted the coal is not so good as it formerly was, what remedy should be adopted? Is the present winding-engine the best that can be used, or have the French and American engineers advanced on this type of engine? Is not the stone-breaker used in most foreign mines, and in all mines of any note in America? And are not the Americans far in advance of us in crushing, stamping, and milling ores? If so, is it prejudice or ignorance that overrules the introduction into Cornwall of all those tried labour-saving appliances now in use among modern miners? Has the old drudge Cornish stamps been improved for the last century? Has not more economical and speedier machines been brought into successful operation, but looked upon with distrust by Cornish miners, and still continuing to turn out ten times more work in 24 hours than the old stamps? Are there many natural eligible sites in Cornwall particularly suitable for carrying out schemes for water supply, as propounded by your Prize Essayist, Capt. R. Goldsworthy, of East Pool Mine, in the Journal of Oct. 18? Could not the windmill be made available for stamping purposes? Cornwall being a neck of land, the wind sweeps over it on every side. Which is the safest and strongest explosive agent to be used in the deep mines in Cornwall? Mining being carried on profitably on the Continent, deeper than in Cornwall, have they a safer means or more expeditious method of raising and lowering the miners? Rock-boring being successful in many mines, why not available in Cornwall? Could the air compressor be fixed in the level, and worked by horse, manual, or hydraulic power? Many more questions might be put, but if the solutions are not forthcoming no good will come of such efforts, and should be omitted from

your valuable columns. If our mine agents, engineers, and students do not come forward and supply the information asked for, and defend themselves against the ungentlemanly attacks made on their ability by Mr. Ennor, then I take it his letters, so full of calumny and base insinuations, are beneath the notice of the most intelligent and respectable class of men in the county of—
CORNWALL.

PRACTICAL MINING—SUGGESTIONS TO MINE AGENTS.

SIR,—I observe "A Miner" has fallen into the same error as his opponent, Mr. Ennor—pretending to solve the vexed questions of the day, but in reality offering no suggestions whereby the mining engineer may reduce his costs, and thereby save himself from impending ruin. In summing up the remedies to be employed to make deep mines pay, he says we must substitute better boilers and better engines than now in use, but does not tell us what class of boiler or engine to employ, or give a description of them; it is one thing to tell us to employ better machines, and another to design something better; at any rate, "A Miner" should have detailed what engines are better, where we might see them in operation; should have forwarded you diagrams, data of duty, and full information for our guidance, that the accuracy of such assertions may be proved beyond a doubt. Every new thing is not an improvement, nor are all the many patent engines, fuel economisers, feed water heaters, &c., in the market really economical, or the right thing to be introduced into our large mines; "grand merit" for progress is very well in some cases, but what different kind of engine "A Miner" would erect for drawing the water from Dolcoath I am at a loss to discover, and shall feel obliged for any information on that point. My experience is so much like your Prize Essayist, Capt. R. Goldsworthy, that I will only refer "A Miner" to page 605 of the present volume of the *Mining Journal*, and ask him to supply a set off to the engines spoken of there. My opinion is that the best means to be adopted for the reduction of our coal bills is to utilise the waste water ever flowing to the sea. For instance, see the Government schemes for water supply to the gold fields of Victoria; how would they have been able to open up the mines in that country if they did not dam up and catch every drop of rain, and store it in their extensive reservoirs? Then we have only to look at the great works of this nature in Italy, Spain, France, the great bunds in India, and the extensive lakes and reservoirs in Bombay, with more such examples which might be brought forward to show there is no place so favourably situated as Cornwall for carrying out great catch-water reservoirs. Would not a company formed to carry out such schemes reap a profit? I think with your Essayist, as above, in page 629 of the *Journal*, something as described there would be a step in the right direction. Will your correspondent kindly give your readers the description of engine he recommends; and tell us which explosive agent is the most useful in metalliferous mines, as the fight is still between Dynamite and Lithofracteur? Guncotton, I think, is not yet sufficiently known to come into general use; but why the Cornishmen are so backward in the use of dynamite I cannot understand. The Cornish miner abroad is the first to try new methods, and is the pioneer in most movements for the advance of mining; why he continues to move on in the old style of things at home, especially in the stamping-machine, explosive agents, and rock-boring, is beyond the comprehension of a—
STUDENT.

PRACTICAL MINING—SUGGESTIONS TO AGENTS.

SIR,—I was very much amused on reading Mr. Ennor's remarks in last week's *Journal* on the formation of gossan, and also the contemptuous way in which he speaks of fossils. What a lamentable ignorance he shows of the merest rudiments of geology when he says that nothing but lead, iron, and zinc occurs—or, as he expresses it, "grows"—over fossil-bearing strata, and these only produced from the "seed" carried up from the lead-bearing layer below the lime formation. What ridiculous nonsense! It is a well-known fact the richest gold reefs occur in the Silurian system, and the Laurentian and Cambrian systems are the principal repositories of the ores of iron, tin, copper, silver, &c. All these systems are fossiliferous.

Does Mr. N. Ennor think that he will get any agents—or, in fact, anybody—to understand such a theory as that "gossan is formed by polar and molecular motion of atoms propelled by electricity through lodes and layers?"
A PRACTICAL MINER AND GEOLOGIST.

PRACTICAL MINING, AND MR. N. ENNOR'S SUGGESTIONS TO MINE AGENTS.

SIR,—The signs of the times are evidently portentous, and seem to indicate that practical mining is in a transition state, or else calling loudly for such a change. The adage that "When things come to the worst they must mend" will be found as true of it as of any other enterprise, and that on emerging from the present depressed condition into which it has been brought it is highly probable it will be more susceptible of improvement, as the ordeal through which it is now passing will tend in some measure to awaken more particular attention to it. At first sight it may appear that its present stagnant condition has been brought about by a fortuitous concurrence of events, but on further investigation I am convinced it would be found to have resulted purely from causes which have been operated by human agency.

I would not be understood to endorse all that Mr. Ennor has written, as some of his views are altogether wide of my experience, and too intricate for my comprehension, but as these relate more particularly to theoretical mineralogy than to practical mining they are comparatively unimportant; at any rate, they are so to me. It must, however, be admitted by every thoughtful and unprejudiced miner that facts which vitally affect the interests of mining are fearfully enunciated by him in the *Mining Journal*. It is true that his ideas might sometimes be conveyed in more congenial phraseology, but if it is the habit of an individual to be outspoken it would be most unwise to treat with indifference information which, if properly embraced and applied, would greatly improve the general practice of mining. It ought not to be difficult for experienced men to distinguish between rational and truly practicable measures and those which are merely the suggestions of an ingenious fancy.

It cannot be successfully disputed that too many mines are not at work, and that it is not to be attributed to the conduct of mine agents themselves to a very large extent. I have long been convinced that one of the worst evils which afflict mining is the predisposition of mine agents generally to write ambiguously, or to draw upon their imaginations to colour reports of mines, which deserve the most unqualified condemnation. I ask in all earnestness, and would thank any of your readers to answer, whether mines ought to be prosecuted year after year, and tens of thousands, if not hundreds of thousands, of pounds spent annually upon the mere chance of finding something, and in the absence of any appreciable features or facts which can definitely be construed, from rational considerations, to indicate proximity to, or even some remote relation with, the desired objects?

Mining is a science embracing, amongst other branches, the optical and logical realms of philosophy, and men, whether intellectually or physically blind, cannot be expected to prosecute it successfully. It is a scientific concatenation of arts practically adjusted, but which in too many instances, as at present conducted, is mystified by ignorance and obstructed by egregious conceits, whilst the cardinal principles upon which it reposes as an immovable basis are either utterly unknown or flippantly rejected. There are many noteworthy exceptions to this view, and in the interest of mining it is well that it is so.

I appreciate the consideration which prompted a Devonport "Adventurer in Mines" to deprecate Mr. Ennor's severity "upon the poor agents," but, as one of them, I esteem the admonition with all its severity much more highly than I can possibly do anything savouring of a humiliating sympathy. The proper position of agents is on the "bridge" as well as at the "wheel" of mining, and not at the wheel exclusively, subordinated to the swaying of a usurper pilot's hand, especially when such pilots have first to ascertain from the "wheel" man the general direction in which they are to steer. These things are just as absurd as to pretend that the ivy supports the oak for the simple reason that it is sometimes found clinging

to it. There cannot be the least doubt but that scores of mines are now in work, dragging their slow length along, propped by fictitious representations, but which do not present the shadow of a reasonable prospect of their ever becoming productive. Than this there cannot be a more short-sighted policy, for nothing is more certain than that persistency in such a course must always stultify the motives by which it was actuated.

It is too often the case, as is implied in the expression of sympathy by a Devonport "Adventurer in Mines," in the Supplement to last week's *Journal*, that they are too often "directed," instead of "directing" others, what course to pursue. And if such an important body of men is degraded—no matter by what motives or instrumentalities—into mere machines, and used for special purposes in the hands of designing operators to promote their particular interests, it is my opinion that they have none but themselves to thank for it, for if they made it a point to defend their principles those attempting to induce them to violate them would certainly desist from doing so.—*Lawrence, Nov. 11.* ROBERT KNAPP.

LEGITIMATE MINING—WHEEL MARY HUTCHINGS.

SIR,—It affords me much satisfaction to observe that this mine, to which I called attention in the *Journal* of April 5, is now attracting the attention of the mining public. Since that time it has gradually continued to improve, and from the latest reports has now increased the monthly sales of tin ores sufficiently to meet the working costs, and as it is further developed will, without doubt, soon enter the Dividend List.

The principal shareholders, taking into consideration the important position that this mine will shortly assume, have decided to alter the constitution of the company from the Cost-book System to the Limited Liability, and as soon as the necessary forms are gone through the new company will be duly registered, thereby giving greater confidence to the outside public who may be desirous to invest in this valuable property. For it must not be lost sight of that the whole of the machinery for pumping, drawing, and stamping is worked by water-power, which is ample at all seasons of the year.

Although labour and materials are at a high price, and the tin market is at present depressed, still this mine is able to be developed at a very small monthly loss, which, on a reaction taking place in the price of this metal, will turn into a profit, and there is every probability of such taking place in the spring of next year.

Those who invest at the present low price of shares will have a fair prospect of making large profits before another year has passed. The public, as a rule, generally invest when the price of shares is high, instead of purchasing into legitimate mines when they are at a low figure, and depressed below their intrinsic value.

Morning News Clusters, Plymouth, Nov. 12.

EDWARD BETTELEY.

A CORNISH MINE MEETING.

SIR,—As but few of your readers have ever attended a Cornish mine meeting, I venture to give them a faint idea as to how the business is conducted, and outside shareholders' interests cared for at some of the mines in the neighbourhood of Camborne and Redruth, and I have no doubt elsewhere. I do not mean to infer that my remarks apply to all, as there may, doubtless, be some exceptions. I select (say) one as an example of a few, perhaps of many. It should be understood that in Cornwall the purser of a mine is all omnipotent; he has the entire charge of the books, and invariably elects himself as chairman at all meetings. It is he who rules supreme, and woe be to him who comes between the wind and his dignity.

As a general rule, meetings are called for 11 or 12 o'clock, and a visiting shareholder, unacquainted with the customs of his co-adventurers, and deeming that punctuality is the order of the day, naturally arrives at the time given in the notice convening the meeting, but finds to his chagrin on his arrival that, like Patience, only on a mine, smiling at grief. Presently, in the distance will be observed, slowly drawing along from all points of the compass, some few of the gentry who will shortly honour him with their company. It should be here mentioned that the regular attendants at these meetings are a few cringing shopkeepers, with perhaps a single share, and a few of the suppliers and would-be creditors of the mine, or their representatives. In a few minutes will be seen a smart trap, or hooded wagonette, slowly ascending the hill. By this time, perhaps, 20 or 30 adventurers may have arrived, and in half-an-hour or so after the appointed time rattles up in his carriage and pair in dashing style—the hero of the hour and great man of the day. A general stupor is made to the office, or account-house as it is called, where the meeting is to be held. All eyes are on the great man as he marches into the room with his cost-book under his arm, and some few of the small fry venture in—faint hand-clap—only to be silenced by "Now, Gentlemen, to business." The great man graciously takes his seat, and without more ado at once turns to the accounts, and commences to read after the following style:—"The accounts, Gentlemen, show the cost-sheet for so and so amounts to so much, ditto, ditto; merchants' bills, so and so. On the other side, we have sold tin ores, less royalty, so much, leaving a profit" whether or no. No dates are given as to the period to which the accounts are charged—no dates of sales of tin. He continues—"Our liabilities are—Merchants, thousands; bankers (perhaps), ditto; royalty, hundreds. Our assets are—Ores unseen, many thousands, leaving a handsome balance in your favour of four figures. Now, gentlemen, those are our accounts. I propose that they be passed and allowed." Before the words are hardly out of his mouth all hands are up; not a voucher is asked for, cost examined, or a question asked—all taken for granted, whilst the probability is that several months' costs remain uncharged. Ores sold the day before the meeting, credited in the accounts, and may be a portion of the ores credited as sold, have not even seen daylight. Almost before hands are lowered, and in the pockets of the respective owners, a snug little or big dividend is declared—of course amidst applause. Capt. Somebody is requested to read the report, which he does in a most artistic manner, whilst the great man closes his eyes, and appears to have reposed into a sweet slumber. The report read, and a few consolatory remarks from the agent, and all is over. Time, perhaps 15 minutes.

The Chairman retires to commune over his good luck, the small fry to indulge in a whiff of the not very fragrant weed, merchants to ponder over the chance of their obtaining a goodly order for supplies, quite regardless as to whether required or not. All this is pending the arrangements being made for the chief event of the day. Dinner is soon announced, and the sight that greets the eye would gladden the heart of a gourmand. Huge hunks of beef, roast and boiled ponderous legs of mutton, a gigantic pie, a fowl or so, and vegetables *ad lib.* The great man takes the head of the table, and the process of carving, which is a study, commences. The stabs of ox and sheep that are handed about by brisk but not over pretty maidens makes one wonder at the digestive propensities of the feeders, and the thought crosses one's mind that more than one must be favoured with the stomach of a statue. Some more delicate constitutions than others indulge in a basin of hot broth in the kitchen preliminary to the more substantial cheer above.

Mountains of vegetables, consisting generally of potatoes, carrots, turnips, parsnips, swedes, and cabbages, may be seen piled on the plates of the respective occupants, and an end view of the long table gives the appearance of carefully-arranged haystacks. Like all good things, dinner must come to an end, so comes the finish to this meal. Tables are now cleared, glasses placed in due order, and decanters glisten with the many-coloured devices of distillers and wine merchants. Matrimony (a composition of Plymouth gin and rum) is invariably the order of the day. Glasses charged, our great man rises, and freely dilates on the splendid property we have in our hands, and congratulates us on our happy position, especially referring to the dividend declared to-day (doubtless to be paid out of money borrowed of the bankers), and then roundly abuses the lords, the merchants, or the Stannaries Court (well-merited abuse I must admit), and, finally, sits down in all his pride to laugh in his sleeve at the innocence of too confiding shareholders.

A speech from a creditor or two, dwelling principally upon the virtues of the great man, and the health of the Chairman and agent having been passed over with all due honours, his majesty retires

(with his cost-book as before) escorted by some half-dozen obedient lackeys (doubtless creditors) to his carriage and pair, to be away to the *tag* end of another account, the management of which afternoon is devoted to mine talk, which varies as the cost of the decanters decrease. Presently, no doubt from the effect of the cigar, Capt. Jack is seen to glide silently and serenely from his seat under the table; from some other cause, Mr. Wallis's chair is buried deep in the bosom of his shirt, strange noises proceeding from his nasal organs, and one or two others show symptoms of imminent in their speech.

The principal agent suggests tea, and a general break-up of the party ensues. Some find their way to the hotel of Redruth, to do a little share business on their own account, and to spend the rest of their evening; others retire to the most convenient quarters for ascertaining what pay or account is to be held to-morrow, when they can probably renew their good fare of yesterday. So the Cornish world wags, and shareholders pay the bill.
Nov. 13.

THE ORIGINAL CORRESPONDENCE IN THE "MINING JOURNAL."

SIR,—On reviewing the Original Correspondence in the Supplement to last week's *Journal*, we find a variety of thought, a variety of aims, and great variety of ability, but a great similarity in point—a great desire in each to favourably impress the British public with his own views. We pass over the leading article, which seems to give us some valuable information in an impartial manner, and would have rendered their correspondence of infinitely more value.

First in order of these comes Mr. B. A. M. Froiseth, U.S. Surveyor, which, so far as any chance of profit to the British capitalist is concerned, has certainly been a failure. Whether Mr. Palford or Mr. Froiseth is correct in their respective views of this affair time will prove. If, however, the British public had taken more notice of such men as W. Eddy, jun., whom Mr. F. has set down as "a common miner," and had avoided the counsel of such geologists as mining experts as America has sent forth to us, the result would be known, have been very much more in their favour. The letter "A Miner," on the Mines of Lake Superior, appears to be of value as giving impartial information. Mr. S. Davies seems to argue a question of boring machines judiciously. We shall be glad to see some of his objections answered, if, indeed, they are not unanswerable. "A Civil Engineer" refers to an important subject, the proof Buildings, but we should like to see a more perfect description of Mr. Walker's plan in order to form an opinion on the subject. "Agent" dating his letters from St. Just professes to give Mining Conversations. Now, this may be a very clever way to put notions before the public, because some readers may be led into the belief that they are really what they profess to be. But who ever heard working miners using such words as "antipodes" and "apocryphous" in ordinary conversation?

Mr. N. Ennor comes forward with his suggestions to agents. The assurance of this man is really beyond the sublime. Where can one read such a fanfare of nonsense? The only sensible paragraph in his letter is the last, which contains so many questions. We certainly think that if he can get all his questions answered, they then form a book which may be of some value. "A Miner" (Devonshire) puts some pertinent questions to Mr. Ennor, which, the sake of his reputation as an instructor of miners, he should endeavour to reply to. "A Miner" (Ontonagon) seems to think that a mine captain should have nothing else to occupy his time but talk to men coming to ask for employment, and that the price per fathom of ground should never change, let it be soft or hard. We have seen men of his class elevated to the position of captain, not proving, after all, the most agreeable of men to work under.

"An Adventurer in Mines" seems to be an admirer of Mr. Ennor, who we suppose will, while he gets such scant encouragement continue to favour the world with his lucubrations.

Mr. C. A. Moreing gives us an account of Trelech Mine, near Llanfyrnach, in Wales. We look to see the author promoting the working of this mine, which, according to his description, certainly merits a trial. We have no doubt there are many more productive mines to be found in Wales. Will Mr. Moreing say what proportion of the proceeds have to be paid the "lord's" as dues? Mr. Robert Knapp displays, as usual, some ability, and has somewhat improved in his facility of language. We think that with further improvement this particular letter will become of considerable value to the readers of the *Mining Journal*. Mr. Tredinnick, as usual, seeks to abuse all mines with which he is not in some way connected. Mr. Reeves refers to the public samples at Tavistock of copper ore from the Great Belstone copper lode, as proving that 6 ozs. of silver contained in the ton of stuff broken from the lode. Now, as these samples prove only that the copper ore produce that quantity of silver, we query what proportion of the lode lode is then assumed as copper ore? Mr. Alfred Harper, in his letter on the Fron Valley Mine, seems very cleverly to advocate the cause he has in hand.

The letters on East Van and the Central Van being controversial and simply brokers' differences of opinion, we pass over as not of public interest. The same may be said in regard to the Richmond Consolidated, and Wheel Vincent Tin Mine. "Justice," the ablest of this writer complains of should certainly be put an end to; but why does he not name the concern? We certainly think that such a course is, at present, the most direct and legitimate way of dealing with such abuses, and the most likely to put an end to them. "A Traveller" advocates Mining in Breage. This certainly has been a good mining district, but all the mines worked have not been alike profitable. Wheel Fanny may be as he describes, but if "A Traveller" wants it worked, an advocacy by anonymous writing will not promote its interest much.

READERS OF THE "MINING JOURNAL"

MINERS' CONVERSATIONS—No. IV.

John.—Did you ever see Mr. N. Ennor in his travels?
Bill.—Yes, several times. He is living on his "means," people say, and spends his time in visiting all the mining districts for pleasure, and sometimes for profit by reporting on any mine when requested to do so.

John.—What do you think of him?

Bill.—I never spoke to him in my life, but I have heard several agents speak of him without much respect. They say that of all men they ever knew he is the most conceited. Whatever he knows, it is clear he does not know himself, for if he did he would not say (the agents) expose his egotism as he does in the *Mining Journal*. I have read all his letters inserted therein for several years, and perceive a spirit of pride arising from a presumed knowledge of "Nature's Laws," and of everything else. The letters, I believe, are written for nothing but display. He is courting the praise of the mining people for the assumed possession of superior intelligence in relation to geology, mineralogy, &c.; but many of the agents laugh, and call his presumed superior knowledge in question.

John.—I believe that conceit is inherent in every man, but in Ennor it is developed in a high degree. I confess that the infirmity attaches to myself, but I do not let the world know it like he does, and I try to subdue it. It is amusing to read the questions propounded by him to the agents of mines—questions which I believe he cannot even answer himself. It is an easy thing to ask questions which nobody can answer. That mode may be one way of showing scientific knowledge!

Bill.—His recent letters have depreciated the agents of mines most unwarrantably, many of whom are very trustworthy men.

John.—He admits that Capt. R. Pryor has discovered a good mine in New Great Consols, which is something for Ennor to do.

Bill.—Capt. R. Pryor is one of the best of agents, and more successful in procuring good mines than any agent that I know. There is Wheel Kitty, in St. Agnes—a dividend mine—which would have been idle many years ago but for him. He kept it to work some time on his own responsibility, when the credit of the company was gone—at least with some merchants. He had confidence that it would

and he soon cut the bunch of tin ore which continues up to the
—Then, why did he leave the mine?
—Capt. Teague, they say, squeezed him out.
—How many mines has Capt. Teague under his management?
—Tincroft, Wheal Kitty, Carn Brea, Wheal Seton, and Pen-
—You know it has been said that "Fools build houses, and
men buy them." Now, Capt. T. is a wise man by getting into
houses, when he sees that he can do it without risk.
—What mines has Capt. Pryor besides New Great Consols?
—He has New Phoenix Lead Mine, North Treskerby, New
—I think one or two besides; and they all either prosperous or
on the eve of prosperity. Capt. Pryor is one of the most
agents in the county, and one of the most honourable. He is
free from the guile which you will find in many, and will not
party to what people call "a job."
—I have always had the same opinion of him as yourself.
—He is very fair to the men. He is not tyrannical, like many are.
agents soon after they put on a captain's jacket show off as
they were a superior order of beings to the men under them;
Capt. Pryor does nothing of the kind. His son, Capt. Joe, is one
the most clever, steady, unassuming young agents in Cornwall.
—Some people entertain a notion that mining in Cornwall is
to an end; what do you think about it?
—I think that mining in Cornwall will continue till the end
time; and when that will be no man on earth can tell. Mining
is a changing pursuit, like other pursuits. Sometimes it prospers
one locality, and then in another. Gwennap, Breage, and Gwinnear,
under a cloud now, so to speak; and Camborne and Illogan are
the sun of prosperity, which I hope may long continue; but a
will come (I hope it is distant) when the condition of Gwennap,
will secure to Camborne. No mines last for ever. Dolcoath
the other mines about it are deep and deepening; and the time
come when exhaustion of resources will occasion abandonment.
that new mines will be opened, as they will be in Gwennap,
affording employment to a dependant population. I remember
when Treskerby and North Downs stopped nearly 50 years ago
people said that mining in that neighbourhood was coming to an
end, but it has not come yet.—*St. Just, Nov. 11.* AGENT.

THE SOUTH WALES STEAM COAL FIELD.

—Will you favour me by inserting the following remarks on
present and future of Neath, improving the accommodation for
large vessels, and also giving greater facilities to the in-
dustry, and the developing of the most extensive portion of the South
Wales minerals, untouched and in their maiden state? About three
ago you published my last report, pointing out the great ne-
cessity of doing what I suggested, but up to this time it has not been
accomplished. Although many of our friends and burgesses did all
their power to obtain a Bill, still they were not successful. But
we observe that great efforts are being made, and meetings have
been convened, to go to Parliament for the Bill; and what makes it
telling, the whole of the landowners except one have given their
assent, and there is little doubt but the Earl of Jersey will
stand in the background; indeed, it is fully believed he will come
forward and take example from the late Marquis of Bute, and by
granting his shoulder to the wheel, success must then attend the pro-
posals. Those gentlemen have not only given their consent, but
their money also. The present re-election of the Mayor for Neath
no doubt, be the means of pushing this matter forward; indeed,
I hear he has headed the list with 2000 towards meeting this great
need and much needed want; and having such influential men as
bank manager, and the Great Western Railway Company, there
no doubt it will now be carried out. The gentlemen appointed
on the committee—including Mr. Howell Gwyn (of Dyffryn), Mr.
Jones (Llanas), Mr. Charles Price (of that good old firm of Quakers
who for so many years were connected with the Neath Abbey Iron
Company), Mr. P. B. Bidder (Wainceirch), &c.—must and will have
great weight with a Committee of the House of Commons, and it
must not prove successful now that we have the right men in the
right place.
I told your readers many years ago that Neath was designed by
nature to become a large town, having the whole of the mines and
minerals all along the side of the harbour, and pits and collieries
on each side of the river, and the coals can be
worked and lifted up from the mines right into the vessels; these
precisely the same seams of coal as are now so extensively worked
in the Merthyr and Aberdare district, notwithstanding they are
miles away. I believe I did in my last report explain that the
Neath Abbey ruins are within two chains of the centre of the South
Wales steam coal field, and at this point one of the finest rivers runs
to it, showing that fallible minds ought to work with the power
that has put all things so near this Neath. I confess that charity
begins at home, and we ought to take advantage of working the
mines which lay under our feet, and for miles down towards the
 Bristol Channel, and 30 miles south.
I may say that since my last report many excellent openings have
been placed. To begin at home, we have a good paying colliery, opened
up by an old inhabitant, Mr. Evans, of Eaglesbush, and all Neath
wish him every success; also the Old Gnoil Colliery, which nearly
century ago were worked by Sir Herbert Mackworth, and re-opened
by a limited company, who have at last got the water out of a por-
tion of the workings, and sending small quantities of coal to market.
Then we have the Welsh Freehold Company; they are sending coals
to market; they have made a branch from the South Wales Mineral
Railway to their works, and I hope soon to report better progress,
when the branch will be so settled as to find the engine working the
branch instead of horses. This company, we are informed, have
leased Nant-y-bar, therefore enabling them to work the coals from
the Wenallt Riders through their present levels. But to make this
state very profitable would be to sink a pair of pits higher up,
about half-a-mile above the present level's mouth, and so win the
coal now under water; but upon this we shall say more eventually.
The Glynwillim Colliery Company are pushing on very fast with
their outside works, making a new incline plane down to the Aber-
twin siding of the Great Western Railway. Mr. Billings, the man-
aging director, seems very anxious to send coal into market as quickly
as possible, and here I may remark, providing the company will
work on a good substantial level, and cross the Blaentwich fault, I
believe they will come to the very same seams as Dron Vale and
Blany-cwm are working, and once this fault is crossed I do not
know a colliery that can be worked more cheaply and more free
from any dislocations or faults; here they have a large acreage,
and with proper management this cannot but prove a great success,
and make large dividends to their shareholders.
There are also some gentlemen who have taken to the Clyne Level,
and are about pushing on with it. No doubt, providing this level
had been pushed on by the last company they, ere this, would be
turning out 100 tons a-day of coals at a profit of 5s. 9d. or 6s. per
ton at least. However, I hope the present party will, with enter-
prise and perseverance, make this, as no doubt it will, pay hand-
somely, and at present price clear 8s. 6d. per ton with good super-
vision and attention.
BLAENGWENFWD.—This property is situated near the South
Wales Mineral Railway, and about five miles from the Briton Ferry
Docks, and about the same distance from the new proposed docks.
The acreage is about 400 or 500, and lies between two faults. The
coals have been proved upon the property, and to be full its usual
thickness good coal. This property is well adapted for opening out
a good substantial colliery. Driving down the slants to the deep
the coals can be brought to the surface by engine-power; saving
the enormous expense of hauling by horses, the seam dips about
3 in. in the yard, and level headings can be driven both sides of the
slant. In my experience of 45 years I have not known a good col-
liery that can be so cheaply and economically worked, inasmuch as
it is so near the sidings of the railway, and coals can be raised up
and put into trucks for 5s. per ton, including every expense, and the
present selling price is 15s. per ton in the truck. This property has
been reported upon by Mr. Lake Stephens, the underground manager

of the Gnoil Collieries, whose practical knowledge and integrity
cannot be surpassed, and with the additional knowledge of having
known the property for the last 40 years, and stating his conviction
that with a moderate outlay, as mentioned in his report, in six or
nine months he could produce therefrom from 120 to 150 tons of coal
per day.—*Neath, Nov. 13.* ISAAC SMITH.

MINING IN PEMBROKESHIRE.

SIR,—Your correspondent in the Supplement to last week's Journal
has, I regret to say, touched but slightly on the real merits of Pem-
brokeshire as a mineral-producing county. We are led to under-
stand that the mineral deposit is situated pretty nearly in the middle
of a grauwacke and clay-slate basin, extending superficially from
Cader Idris in Merionethshire to Precelly Mountain in Pembroke-
shire, and are both alike situated in porphyritic rock. The great
mining districts of Cornwall are principally situated in a portion of
this grauwacke series or clay-slate, provincially called killas; if it
there contains those veins of tin, copper, and lead which by their
extraordinary produce have constituted the principal wealth of the
county, we may fairly infer that Pembrokeshire possesses all the
elements for successful mining. Indeed, the county can boast of
vast resources, having an endless supply of lime and iron stone, coal
and culm, splendid quarries of slate, copper, and lead; tin may be
added at no distant period. It is true we have only one lead mine
as yet developed—the Old Llanfrynach—which has met with various
vicissitudes since the days of the then Lord Milford, and under the
management of old Captain Marsden, when the returns were truly
marvellous. Subsequently it passed through various hands, each
striving to pick the eyes out without attempting to sink a fathom.
When it got into the hands of the late Mr. Turner a change took
place—under the supervision of Capt. Patrick a fine course of ore
was laid bare. The present proprietors have been for some little
time preparing for a vigorous attack on the hidden treasures under
the management of Capt. Roberts, who bids fair to bring the old
mine to its former standard in olden times, and I verily believe the
ore raised is not to be compared with what remains. A fortune
was spent in the transit of the ore formerly. The present lucky
proprietors will have the Taff and Whitland Railway within a few
yards of the mine, and passing on by that splendid slate quarry
(Glogue), till it reaches the terminus, or station, at Crymich. A few
hundred yards from this, and about two miles due east of the old
mine, a very promising little work is progressing, and bids fair to
match the old mine in time. There is also a promising slate quarry
opening out on a distant part of the sett, which is carried on single-
handed. This sett has been well reported upon by Mr. N. Ennor,
who specially visited it, and there are many more within a short
range only requiring capital and practical minds to develop the
hidden wealth of Pembrokeshire. I should add that there is a large
tract of white killas, decomposed quartz veins, and quartz reefs
4 yards wide. AMATEUR.

MINING IN NORTH WALES.

SIR,—Capt. Knapp may infer from my remarks what may best
suit his convenience to extricate himself from a difficulty which
neither his high-flown language nor his eloquence can do. He has
placed the chain round his own neck, and he must either stand or
fall by facts alone, and not by any inducements to draw me to another
subject. With your permission, I shall offer a few observations re-
specting his remarks. In one of his letters he terms mining in the
locality—"Superficial scratchings, and one in which greater injustice
has been done in the past than any that ever came under my obser-
vation. If there had been a lack of capital there was an equal lack
of skill in its application. It is deplorable to contemplate the great
waste of time and money by the superficial workings of shafts and
levels which appear to have been blindly operated—expensive efforts
misdirected. It was pre-eminently the digging season. At Trefriw
granite occurs, and at the mine fossils of the Devonian period. It
is surprising that so much blindness should exist, when by the light
of experience mining could be read as easily as the alphabet by a
village pedagogue."

The above quotation is the substance of Capt. Knapp's effusion;
and in the last impression of the Journal he boldly tells us that his
object was—"The interest of Welsh mining and Welshmen." It is
perfectly astounding that a writer who can so unsparingly censure
a mining population can so violently transgress the laws of politeness,
after accusing them of incapacity, blindness, &c., that he could
have the temerity in last week's Journal to say that his object in
writing these remarks were "in the interest of Welsh mining and
Welshmen." I do not think that a more injudicious statement was
ever printed. If it is the interest of the Welsh miner to be held up
as a stupid, ignorant, and one scratching in the dark, then Capt.
Knapp has pre-eminently succeeded in figuring him out. But I say
that his remarks, as far as the Nant Bwlch-yr-Haiarn miners are
concerned, is as great a scandal as the most creative genius could
devise. Justice imperatively demands, and I am in duty bound to
say that these miners are famous for their industry and practical
ability and more intelligent men no country has produced, and it
would be well for many would-be sages to consult and learn from
them. As far as he refers to these miners I will unhesitatingly say
that it is a flood of slander and a torrent of abuse. The readers of
the Journal may not be aware that the locality to which Captain
Knapp's strictures apply has many mines, and that some of them
have been worked under the directions of men of undoubted ability,
learning, and experience. Some of them of such high standing that
it would be an honour for many to act as their mining pages. I
will ask the following gentlemen to read the description given by
Capt. Knapp of Nant Bwlch-yr-Haiarn mining, and if they had a
word to say for their conduct and mining operations let them man-
fully face the accusation:—Capt. Absalom Francis, Davy, Dean,
Wasley, Plumber, Hitchens, Frank, &c. It is a wonder to me if one
or more of the Pagan gods have thrown their prophetic mantle over
the shoulders of Capt. Knapp to explore profundities, if they left
the above list of gentlemen to scratch superficially for Nature's treas-
ures. To think of such a distorted act would be a burlesque levity
that would even force the granite rocks and the Devonian fossils to
rush out in laughter.

In my letter I stated that the rocks in the vicinity of the mine are
underlying the fossiliferous. I need scarcely add that my meaning
was that they were below, and deeper. When we say that the
granite underlies all other rocks it does not follow that all other
rocks must overlie it. We find granite on the very top of moun-
tains without any substance whatever covering it. I am aware that
fossils have been found in the Lower Silurian rocks, but not in the Nant
Bwlch-yr-Haiarn Mine, and I feel satisfied that it is more than ever
Capt. Knapp can do to show them. Let him show them to Robert
Owen, the mining agent, who is an old miner and an intelligent
man, if they are there. After all I am inclined to exclaim, in the
words of an eminent divine, "What a pompous introduction to
nothing!" I fear this fossil dispute will end just as the granite did
—with a lame excuse. Yes; the lamest of the lame that was ever
offered to the readers of a newspaper. It is ridiculous to think of
a man bringing such accusations against his mining brethren, and
proclaiming in the face of the world that granite occurs at Trefriw,
and when he is asked for his authority he declares it to be—a village
grocer. Did anything more absurd ever happen? J. KENRLE.
St. Asaph, Nov. 12.

FRON VELLAN MINE.

SIR,—I notice in last week's Journal a letter from Mr. A. Harper,
late manager of this mine, and a very peculiar letter too, its pecu-
liarity consisting in this, that after reading it one is just as wise as
before. He still speaks of the mine looking favourable; what I
want to see is not "favourable spar," but lead ore. Capt. E. Harper,
his brother, the present manager of the mine, has been telling us from week
that this lode is promising and that lode is promising; it is high time that
the lodes did something besides promise. We were told some time ago that
the lode was producing 2 tons of ore per fathom. What has become of this rich lode?
We hear nothing about it now. If there is a lode of this value why is another call
made, payable in a few days? This call, in connection with the same monotonous
"we expect something good shortly," and the utter absence of anything good at
present, does not tend to raise the spirits of the shareholders.
If Mr. Harper thinks I have nothing to do but to answer his questions he is much
mistaken. Concerning the course adopted by him the least said is the better. I
would ask him if he knew that the lode had changed its underlie till his father

came to show him? Mr. Harper, also, is very much mistaken in supposing that
private pique has anything to do with my letters, and I can inform him that the
"anonymous scribbler" knows as much about Fron Vellan Mine as he does, and
perhaps more. I again repeat that it is such mining—if it can be called mining—
as is carried on at Fron Vellan that deters men from investing in Welsh mines.
INTERESTED.

FORTESCUE TIN MINE.

SIR,—Looking into the *Mining Journal* Share List this morning,
I observed that the quoted price for the shares in this mine is about
9s. each, 12 paid up. This shows the truth of the repeated statements
of your correspondents, that the quoted price of shares is no true in-
dex of the value of a mine. I have known very poor, perfectly un-
productive mines quoted at prices ridiculously high; and those producing mineral,
with the best prospects, quoted ridiculously low. Such is the case with regard to
Fortescue. It is a tin mine of rare promise, having many lodes of a "masterly"
character, all of which are yielding stuff for the stamping mill. Many tons of tin
are now ready for the calciner, which, in passing through the mine to-day, I saw
in the hutch. It has been intimated to me that the depression in the price of the
shares is attributable to the operations of some brokers, whose interest, no doubt,
it is to obtain them at a low figure. I advise those gentlemen who hold shares in
the property not to part with them under par; for, when the sales of tin begin
they will, doubtless, cause a great advance in the quotation, despite the artifices and
machinations of selfish and unprincipled men. The machinery on the mine is of
the best description, and every appliance for the dressing of the tin is nearly
complete. The next addition to the machinery should be that of 35 stamp heads,
that the mass of tinstone, so easily accessible, should be reduced in greater quanti-
ties. Hitherto carts were in use for carrying the tinstone to the stamps. This ex-
pense is now obviated by the construction of a railway, extending from the stamp-
ing-mill to all the points of surface operations. The dressing apparatus is con-
structed on the best and most improved principle. There are 67 self-acting frames,
which retain all the slime tin, so that there will be no loss, as in the mines adjoining
the Red river, of which so much complaint has been made.
Camborne, Nov. 12. A TIN MINER.

FORTESCUE TIN MINE.

SIR,—"Shareholder," who proposed a question in last week's Journal as to the
absence of reports on this mine, is respectfully informed that the majority of share-
holders desire it, and the agents have been instructed to suspend for the present
the weekly reports, in consequence of the depreciation of the shares in the public es-
timate, occasioned by the conduct of ill-disposed persons or persons. The mine
will speak for itself shortly, by means of the sales of tin ore. The quoted value
of the shares "in a mine such as this" is most unnatural, and can be accounted for
only on the ground of artificial dealings, for most of the shareholders are investors,
and would not think of placing their shares in the market at such ridiculously low
prices as they have been quoted at. If any shareholder desiring information will
apply, with his real name and address, to the secretary, at 32, New Broad street,
London, he will obtain it from— J. HARRIS-JAMES, Managing Director.
Grampound Road, Cornwall, Nov. 13.

FORTESCUE MINE.

SIR,—In your last week's Journal "A Shareholder" asks why it is that reports
on this mine have not appeared in the Journal for some time past. As I have a
knowledge of the mine, as well as of the district in which it is situated, and feel a
pleasure in every successful speculation, and having made enquiry on the subject,
I will answer your correspondent's question. The reason is this. About two-thirds
of the shares are held by Cornishmen and Scotchmen, who have been so dissatisfied
with the wicked brokers in "Bearing" the shares (for how otherwise can the de-
preciation of the shares in so valuable a mine be accounted for?) that they have
instructed the agent to withhold reports, for the present at least. I am at liberty to
question, and do question, whether your correspondent is a shareholder, for the
shareholders know that any information relating to the mine can be readily ob-
tained thereat, or of the secretary, 32, New Broad-street, London. AN AGENT.
St. Stephen's Church Town, Nov. 11.

ROSE UNITED MINE.

SIR,—The causes to which the promoters attribute the collapse of this company
appear primarily the stoppage of Great Wheal Busy, and, secondly, the refusal on
the part of the lord to allow operations to be continued at the shallower levels.
How far the stoppage of Great Wheal Busy affects Rose United is best known to
local shareholders; but it seems incredible that the lord after receiving, I believe,
5000l. for machinery supplied to the mine, and then relinquishing his holding of
500 shares, should have so little sympathy left for the remaining shareholders as
to deprive them of the only resource of retaining their interest until better times
should justify a full development of the mine, a valuable property, when other lords,
on whom there is full claim, are reducing their dues, and, in some cases, temporarily
remitting them. Being thus driven into liquidation, it only remains for us to make
the best bargain of what remains; and as the resolution, confirmed on the 5th inst.,
renders London shareholders powerless, it now devolves on the local adventurers
to see that machinery costing such an enormous sum be not sold in "a corner."
Should the lord decline to take the said machinery, the promoters propose then to
sell it privately, but I have not the slightest doubt that the best and most straight-
forward course would be to submit it to public auction, as required by the Stan-
dards Act.—*London, Nov. 12.* A LONDON SHAREHOLDER.

EAST VAN MINE.

SIR,—Upon enquiry at the secretary's office, I am informed the annual general
meeting of the company will take place upon the 28th of this month, due notice of
which will be sent to all shareholders, who will then have an opportunity (if they
attend) of ascertaining personally from Capt. Williams, the manager, his opinion
of the future prospects of this valuable property. I may add Capt. Williams was
the discoverer of the Van Mine, and no man knows the district and bearing of the
lodes better than he does, and few mines have better prospects than the East Van,
with 7200 unexpended capital at the bankers.
33, Poultry, E.C. H. GOULD SHARP.

WHEAL MARY MINE.

SIR,—For some months past we have repeatedly been informed by circular and
reports in the *Mining Journal* of the piles of tin-stuff on the ground at the above-
named mine ready for the stamps, but no sales have been realised to reward the
patience of the shareholders. At last we find that coal has arrived at a neighbour-
ing station two miles distant, and trust that the managers will instantly avail
themselves of it, and use their utmost diligence to obtain a supply which will suf-
fice to keep the stamps going. A SHAREHOLDER.

UNTRUTHFUL PROSPECTUSES.

SIR,—Allow me to inform "Justice" (whose letter appeared in last week's Journal)
that by what is commonly called the Companies Act it is enacted that if anyone
connected with a public company shall make, or concur in making, false statements
about that company, with the view of deceiving shareholders, he shall be liable on
conviction to the punishment of penal servitude. If "Justice" and his fellow-
shareholders will act at once with proper legal advice, they will either get their
money refunded or punish the delinquents as they deserve. CAUTION.

ON DEEP AND SHALLOW MINES.

SIR,—I have noticed this past two weeks Mr. Ennor's remarks on deep and shal-
low mines, and I quite agree with Mr. Ennor's remarks that many lodes, slides,
clavans, and cross-courses can be and are discovered at surface, and proved so as to
warrant and justify the sinking of deep shafts and erecting expensive machinery.
We have a copper mine (as will be seen in our advertisement) that was opened se-
veral years since by the means of a railway cutting; indeed, the gossan of the lode
on this has been traced into the hill, which will give 40 fms. of backs to stope away,
with a supply of water from the River Camel that could sink the mine 100 fathoms
deep if required, by water-power, and is close by the side of the railway. The
lodes run through the whole length of the mine, which is about one mile in length
on the course of the lodes. These lodes have been opened up, and about 7 tons of
splendid copper ore taken out and sold—indeed, this a splendid property, and is
held under grant from Lady Molesworth at 1-18th grant, and capitalists would do
well to turn their attention to such properties as the one described instead of going
into a deep sinking and erecting heavy machinery. By driving this adit level
40 fms., and then cross-cutting the lodes, I am sanguine would lay open a splendid
mine; then, if found necessary to erect pumping machinery, could determine
fully where to place the shaft, which could be worked with water-power, and
water for crushing and dressing. I may here remark that the stratum is slate killas,
a generalised stratum of ground; and, indeed, from what I have seen of this prop-
erty, I am fully persuaded there is a rich mine to be obtained with shallow work-
ings.—*Roche, St. Austell, Nov. 12.* S. R. COCKS AND CO.

MONTE ALBO MINING COMPANY, SARDINIA.

SIR,—An extraordinary general meeting of this company was held on Oct. 30, at
their offices, but with the exception of three lines in the Journal, announcing that
the company would be wound-up, nothing whatever has been published, or even
printed, of the proceedings for the shareholders, more than one-half of whom were
absent from the meeting. The company has been in existence 3½ years, has held
four general meetings, has paid no dividends, has never had a quotation in the
Stock Exchange, and is now being wound-up on the petition of its own Chairman
in the Court of Chancery, the solicitor to the petition being the solicitor to the com-
pany, and the liquidator appointed being a director and deputy-Chairman of the
company, the petition having also been filed in August without the shareholders
ever being consulted on the subject, and the general meeting held within eight days
of the date when the petition was appointed to come on for hearing. The managers,
in their last report, read at the meeting on Oct. 30 (but dated June), gave a favour-
able account of the progress of the mine, and at the same meeting it was mentioned
that a private but favourable report had been made to the Chairman. Why, then,
is the mine so suddenly wound-up when these statements are made? Was a single
suggestion being offered by any of the directors to try and save the company from
ruin and ruin. But an announcement was made to the effect that the mine would
be purchased or taken out of the Court of Chancery and worked by the director
who filed the petition. From the mine has been raised over 3000 tons of lead ore
during the 3½ years existence of the company, but thanks to all concerned, this
has cost about 200l. per ton to raise, and has been selling at about 10l. per ton (ac-
cording to the statement of accounts issued). The original cost of the mine to the
company was 86,000l. The petition now filed represents a creditor of 13,000l., ex-
clusive of debentures and shares. What the original and present directors think
of all this shareholders know little, but a greater muddle and a worse piece of
bungling it seems not possible to conceive, even before the mine could be taken
possession of nearly 5000l. had to be paid to clear up the title.
I should be glad if, amongst your numerous correspondents, any of them could
give some information as to the actual condition of the mine from personal obser-
vations they may have made during a visit to Sardinia. A SHAREHOLDER.

CHONTALES CONSOLIDATED MINING COMPANY.

SIR,—In reference to your report of the meeting of the above company, as regards
the desire to have a shareholders' director, allow me to say that not only would
proxies be unavailable if not sent by return-post, but that time only allowed of one-
half of the shareholders being applied to; yet, under these disadvantageous cir-
cumstances, the large number of 10,000 were returned by Wednesday—some not
in time, the applications for the country not having gone out till Monday night,
and some of those for town having been posted on Tuesday. The proposition was

never put, but this desire on the part of the shareholders was set aside at a meeting of 21 members, including directors, one member not voting, by an amendment being carried that it was not expedient to elect another director.

WM. BURKE RYAN.

MINING IN COLORADO TERRITORY, UNITED STATES.

SIR,—From my previous letters you will have seen that my principal object was to point out the solid advantages of Colorado mines as a field for the judicious investment of English capital, and as a warning to avoid the schemes, as plausible as they are fallacious, which professional speculators are continually trying to palm off upon the English public. It is the heavy companies that have so long depressed mining in Colorado. Hundreds of thousands of dollars have been spent over and over again on mills and other reduction works before their mines have been thoroughly explored to ascertain the quantity and quality of the ore, and, when finished, have as often been found utterly worthless, or remained idle for lack of material to keep them in motion. It is, therefore, with deep regret that during a recent tour through Park and Summit counties I observed the same suicidal policy being carried out by an English company in Hall Valley, Park county. This company has purchased a number of lodes and locations on the very crest of the Rocky Mountains, most of them above timber line, and for seven or eight months of the year nearly inaccessible. The principal one—the Whale lode—has a pay streak of from 6 in. to 2 ft. of low-grade ore. To every practical miner here it is well known that these mines can only be made to "pay" under the most advantageous circumstances, while their almost inaccessibility can scarcely fail to bring failure on the undertaking. Again, this company, like their predecessors, are expending thousands upon thousands of dollars upon railroads and mills before they have explored any of their mines, except to a very insignificant extent, and before they can know whether or not they have any ore to reduce.

Let intending investors come out here, and with the assistance of some uninterested practical miner personally examine the mines of this and the neighbouring counties of Park, Summit, and Boulder, and they can find investments as good as that of the famous Park Pool Association, which in three months of the present year divided \$30,000 on a paid-up capital of only \$20,000. DANIEL ROBERTS.

Georgetown, Clear Creek County, Oct. 23.

AMERICAN MINES—OLD TITLES—A NEW DIFFICULTY—THE EMMA MINE.

SIR,—The many unforeseen, incongruous, and overwhelming difficulties which have heretofore beset American mines, jeopardising their existence in the English market, were already sufficiently multifarious in character to have rendered it next to impossible for any new difficulties to present themselves. But, unhappily, such is not the case, as another question has arisen—that of "old titles."

To afford your readers some idea of this vitally important question, which is at present engaging the attention of the American law courts, and debated in the American press, I cannot do better than, in the first place, quote from an American paper one instance as bearing upon the Emma Mine. The writer in question says:—

I think it is fairly deducible that there were certain parties who were at a certain period in possession of the Emma Mine, who claimed to own it under valid titles, and who had applied for a patent upon it; and that Park and Co. belonged among them, or were the agents of them; and that there was also another party, who claimed to own the mine under certain adverse "old titles," but that they were not in possession and had filed their protest to the patent; that in this latter party were Lyon, Lent, and another; that for \$150,000 Lyon withdrew his protest and allowed the patent to be issued; that for \$100,000 Lent declined to expose any fraud there may have been in the manner of obtaining the patent, and thus permitted Park and Co. to effect a sale in London; and that when the contest between the two parties came on for trial before the Court in Salt Lake the managers of the Emma Hill Consolidated Company, which is the organised claimant and owner of these "old titles," did, for the sum of \$100,000 consent to have a verdict rendered against their own company and in favour of the purchasers and present owners of the Emma Mine.

Another writer says:—My interest is indissolubly connected with "old titles," and is dependent upon their ultimate success; and although I believe the Courts of the country are the only proper and legitimate tribunals for the discussion of their merits and the settlement of their claims, yet I have a few questions to put, or statements to make. If it be shameful and treacherous for one party to seek indemnity for his own interest, outside of the combination and to the detriment of the whole, is it not much more so for another party, upon the profession of integrity, to absorb into himself the management of the whole concern, and to set at naught the wishes and rights of his deluded but equally interested colleagues? Dividends are useful in the way of paying personal expenses, if one can only collect them; but when they admit of division and adhere tenaciously to the pockets of but one partner, I fail to discover of what earthly benefit they are to the other parties in interest. Theoretically the thing is grand, but practically it is quite absurd, and very much resembles some fantastic effort to "cloy the hungry edge of appetite by base imagination of a feast."

It appears that the officers of the Emma Hill Consolidated Company own nine-tenths of all the adverse "old titles," the validity and equity of which are urged from the fact that the first party, or some members of it (or some agents of it), paid to designated members of the second party certain specified sums of money for the purpose of consummating their enterprise.

I dare not further tread upon forbidden ground, except it be to add that this is a question in which each shareholder in an American mine has a direct interest, and fully explains the basis upon which adverse claims are continually cropping up, so utterly perplexing and disconcerting to all associated with existing incorporations.

London, Nov. 10.

LEX.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—I do not aspire to the possession of the intellectual attributes of your gifted correspondent, Mr. Postlethwaite, and, therefore, his euphemistic metaphors, so elegantly expressed in the "ruffling of feathers" and the "laying of eggs," I am compelled to pass as too transcendent for the ken of ordinary intellects, and come at once to facts. Unfortunately, I shall be unable to be present at the general meeting of shareholders, on Tuesday, but, for my own information, as well as that of many fellow-shareholders with whom I have conversed upon the matter, I should like the Chairman to reply to the following queries:—

- 1.—Upon what ground is credit taken for £2,539d. (balance at debit of capital account), as this item appears in the general balance-sheet?
- 2.—From whom is owing the item of 10,535d.—"sundry debtors?"
- 3.—If it takes 6 tons of ore to produce 1 ton of bullion, of the value of \$250, from which has to be deducted the cost of its freight to market, a distance of 200 miles, and it costs 40 cents per bushel for charcoal, 35 cents for smelting, 35 cents for roasting, 85 for haulage, \$1 for iron ore and lime-rock for flux, and \$2 for incidental expenses, what is the amount of net profit realised?
- 4.—Is the important item in the "profit account" (\$456,200), estimated returns due on "unrealised shipments," based upon a bullion value of \$1 50 c. per oz., or its actual present value of 95 cents per oz.?
- 5.—Is the explanation of the recent desire to borrow money on this side to be found in the difficulty, if not impossibility, of selling bullion, even at its reduced value? If this be so, why are the directors in their report perfectly silent upon a point of such importance?

Information from the Chairman upon each of these queries would be gladly accepted by many, and not less so by me.—Nov. 10.

A SHAREHOLDER.

ENGLISH MINING—ITS PRESENT AND FUTURE.

SIR,—A "Fair Play" is again facetious and kind; but "Observer" is, as usual, both morose and insolent—nevertheless, I am fully prepared to respond to his most unwarrantable attack upon the probity of my best friend, and I again repeat that the Devon Consols, Gawton, Wheal Crebor, Hingston Down, Prince of Wales, Wheal Barnard, and other mines will average 6 ozs. of silver per ton of stuff taken from the lodes, save and excepting Wheal Barnard, which gives 10 ozs. This is a matter that can easily be proved. Let a sample of 5 or 50 or more tons be taken, and submitted to Dr. Philson, Mr. W. White, of Finsbury place, and Captain W. Knott, and I will pay for the assays, provided that "Observer" discloses his real name, and will place samples at his own cost in the hands of any three other assayers he may choose to elect. That there will be a great difference in the products I do not doubt, for within the past few weeks, even in rich ore, from my own practical experience, assayers have differed from 100 to 300 ozs. of silver in a ton of stuff, and, therefore, it stands to reason that in very poor ore one may make 5 ozs. and another 2 ozs.; but this will prove the secret, and let the assayers have a warm discussion, and settle the matter between themselves. One thing is quite clear—the silver cannot be extracted unless it exists, and the man who obtains the best product must have the truest card. Should Captain Knott be at the top of the list, I will accompany him to any assay-office in England, and after he has proved himself to the satisfaction of his brother assayers, my very intimate and most esteemed friend, Barnard the Quack, will go through his performance with 7 lbs. of the ore, and give ocular demonstration of how it can be successfully and commercially treated upon a large scale; fortunately, his working apparatus is not very extensive, and can be picked up in any English town—since it simply consists of a frying pan and flower pot, with a bit of old linen to act as a filter, add to this a handful of salt and one or two simple chemicals, and without my magic twist of the wrist—lo! behold! a better secret than alchemy is revealed. Yes, my friends, a simple flower pot in the hands of a quack will have the means of turning mining from beggary and starvation into success and wealth.

It is amusing to find that the West of England Fire-clay, Bitumen, and Chemical Company have taken the matter in hand, as it is only a few months since some

of the representatives were ridiculing the efforts I was making to reach the goal of success, and they had then about as much thought as the world-renowned West of England Fire-clay, Bitumen, and Chemical Company have now, in the matter of keeping back the real value of the silver from the miner, or, more probably, he is a great representative of mining itself, and fears that the quack will have all the glory and honour for his successful discoveries. And now to another point—I am no professor of chemistry, like Mr. Dobie, of the Wheal Brothers Mine; but everyone in this district knows that for two years he had, through me, unlimited means at his command to try any schemes that he chose; but I say it without any false conceit, absurd egotism, or fear of contradiction, that unless I had set to work practically myself no real success would ever have been achieved. Some of the old shareholders who have lost a few paltry 10s. notes I know repeat in their morning and evening devotions many anathemas upon my poor aching head, with earnest hopes that I may die in a ditch for misleading them; but, alas! it is in the Quack that you behold the slaughtered lamb, the real victim. Mr. Dobie has no curses from me. I sincerely wish him every success; but he must not forget that, with all his professorship, he could do nothing but obtain silver at a loss until the Quack led the way with his flower-pot scheme, which was soon copied on a larger scale, and landed the professor in his present happy position. These mild rebukes would not have emanated from my pen, but I could feel annoyed that Mr. Dobie should have the consummate impudence to hazard a remark that the Wheal Barnard will fall to the ground unless the services of a professing chemist are engaged. We have already a professor of quackery upon probation, and he can hardly do much worse mischief than the professor of chemistry. If compelled to refer again to this, I shall certainly be more severe, and repeat some very unpalatable truths; but Mr. Dobie, like myself and many others, has good as well as bad qualities in his composition, and searching for and exposing the bad qualities of his neighbours is a paying speculation. A few of England's Fire-clay, Bitumen, and Chemical Company have a fine field before them, as they will be able to turn everything to account. In such large works nothing need escape their notice—sulphur, arsenic, silver, copper, and tin, and many other *et cetera* will find their way into the income-book. I presume that if the Quack were found upon the premises looking after a wrinkle, or ventured to ask for a leaf, he would be summarily ejected. Well, such is life! it is only human nature. One happy consolation, if the company do not behave themselves, and give a fair price for the ores, each mine can consume its own smoke, and go into business for itself. By-the-by, I enjoyed friend Ennor's dispatch of last week. How he does want to mine quackery! Poor victims of unfortunate circumstances they do not deserve one-half that he says of them. I believe that mine captains, with a few exceptions, are like a groom with a horse—they make a hobby of the animal, and do their best to bring out his good paces and qualities; but if their employers can only afford a broken kneed, touched-in-the-wind, blistered quadruped, naturally the mine agent loses heart, and bad goes to worse. This may be wrong, but a Quack is not supposed to be a moralist. It strikes me very forcibly that if Mr. Ennor had studied quackery the world would have been a gainder as well as himself. It is all very fine for him to exhort his fellow-miners to "keep the law," and to "sing the praises of the law," but here we have another professor who, with sixty years' experience, has never had but one success in his life, which was the Old Treburrington, and yet even he, the paragon of immaculation, managed to leave immense wealth for Capt. Hancock, the present agent; but, perhaps, as "Fair Play" aptly observes, the silver has grown since Dad was manager. If my opinion is worth anything, I say that there are plenty of good mines already discovered. What do we want with more than 600s. of silver and 2 percent. copper? and there are hundreds of thousands of fathoms of such good stuff as yet unexplored. I am not at all in favour of "stopping 2 percent. on a better leave it where it is." This, of course, applies to the old system of working, as the smelters will not buy it; but when it has a money value by the quackery process of at least 30s. per ton, a very different light is reflected upon the matter. Depend upon it, Mr. Editor, "Observer," and readers all, the brightest day is now dawning upon mining: such a day that has not been experienced for ages. It is strange, but still a fact, that money is always, or nearly always, procurable for mining, although, as a general rule, with but very few exceptions for hundreds of years, loss has followed loss. Then turn the tables for once, and let us see how the quackery process will work. I will be our portion by utilising every part of the numerous healthy lodes already known in England. Yes, friends, ring the bells, let us grasp hands, the day of rejoicing is near, and instead of grovelling in sackcloth and ashes for the death of English mining, we shall herald forth its new birth, and lounge and repose our weary limbs upon velvet pillows and beds of roses. What, still a murmur? I thought I detected one chord of dissonance. Bring the dissentient hither. Now, friend or foe, speak out. What are you mumbled about? Every man has a free voice upon this important matter. We are all attention. "Then listen and hear:—What you say seems very reasonable, but you are so accustomed to singing the praises of mining that I will venture you know nothing about its defects with the exception of your own personal misfortunes just recounted—in fact, I do not think you could abuse mining if you were to try." My worthy friend, there you wrong me. I have but one object in view—the real success of mining, and already I have suffered the pains of purgatory in its behalf; but on the 19th of this month the works will be started at Wheal Barnard, and 24 hours later, like any ordinary legitimate business, the secret will be absolutely solved. I am ready to allow that this mine will not prove so rich as others; but, perhaps, "Observer" will not fail to arrange that the mine be taken at the very lowest price, and that the mine be sold for ever and ever the number of ounces of silver contained in the ore sold to the smelters, and then we can afterwards proceed further with the programme. I am perfectly convinced myself, but should like others to enjoy the same feelings; and, perhaps, when "Observer" is inoculated against his own inclination he will in the future be more careful before he huris insults at a man whose besetting sin is an earnest endeavour to achieve an honest and profitable discovery and return of mineral. In the meantime, if you really wish to see the dark side of mining, I will send you a copy of the "Mining Journal," which is the very brightest picture, and you can then form your own conclusions. Carn Breva, one of the few great English mining trump cards, gave a handsome dividend last quarter; unfortunately, none of it came to my share. Whether all the debit accounts were charged up or not is none of my business; but, having had some experience in squeezing out dividends, I will, without seeing the books, venture a remark that the book-keeper, if posted in his work, did not forget to also post every available item to the credit of income account. If in his place, I should deserve to be kicked if I omitted to credit 10 tons of tin sold. Well now, for curiosity, reduce the tin 10s. per ton; nay, you need not be so cautious as with the last year's tin has been sold for half its present price, and it would be no great miracle to wake up one cloudy morning, and find a reduction of 10s. per ton; sequel, the returns would then be insufficient to pay costs, and, consequently, the king of miners, Capt. Teague—oh! horror of horrors—must of necessity be actually loosed with the ace of trumps in his hand.

4, Abbey Mount, Tavistock, Nov. 5.

TROS. J. BARNARD.

[For remainder of Original Correspondence, see to-day's Journal.]

THE FUTURE OF CORNWALL.

At a time when so many persons—mistakenly, as we believe—appear to be of opinion that the future of Cornwall—that is, in its mineral relations—is something more than trembling in the balance, there is a special interest attaching to all signs of increased vigour. Nowhere are such signs more manifest than in connection with the vast undertaking—for it is no less—of the Cornish Consolidated Iron Mines Corporation. And yet there are not a few Cornishmen who still hesitate to believe that this gigantic concern really means business. Some allowance must, we suppose, be made for men whose predecessors, and who themselves, have neglected to develop the most remarkable lode which the county possesses—a lode which has been known for years, the width of which is measurable by the foot rather than by the inch, and which may be traced from its outcrop in the cliffs of Perran Bay for mile after mile inland. If Cornishmen with their practical experience had passed it by, was it likely that strangers would be able to make anything of it? Well, perhaps at first sight there did appear to be something in this; and perhaps it was not more than was to be expected that the spirited and far-seeing combinations of Mr. Roebuck should be looked upon a little askance. We are hardly exaggerating when we say that for months the schemes alike of the Iron Mines Corporation and of the allied

The 130 is driven 70 fms. east of the western cross-course, and is worth for tin and copper 16s. per fathom. There are two stopes in the bottom of this level worth 22s. per fathom each stope. The winze in the bottom of the 140 is down about 5 fms., and is worth for tin and copper 26s. per fathom.—W. S. GABBY (Manager), JOHN MAYNARD, JOHN HOSKING.

The CHAIRMAN said that they were now in just the same position as they were before the accident they experienced some time since, and he hoped they would go on with something like cheerfulness with the beginning of 1874. He was happy to state that the water was now in fork to the bottom of the mine. He occupied the chair that day with a great amount of pleasure, even more than he ever felt before. Capt. Garby and himself had worked out a 21 years' lease, and they had a new one preparing. When they took possession of the mine it was one of the poorest in the county, and was nothing but skin and bone. When he purchased the interest of Lady Bassett, he came to their manager of the mine, and asked him what he intended doing. He did not appear to know what to do, and he (Mr. Dennis) proposed that the mine should be sunk deeper, when the manager said that was utterly useless. However, they had sunk, and although it was a difficult job, it was there that they had found their mine. The trouble and difficulties they had had during the past two years were something immense—what with the water, and the breakage in their engine, they had had a critical time of it. But he was happy to say that they had now, by dint of exertion, wiped off the debt brought from the last account, the water was in fork, and altogether, the mine was never looking better, nor had they ever had better before. (Hear, hear.) The richest part of the mine was, undoubtedly, in the bottom, but they were, to use a rather strange expression, sinking upwards. From the 180 upwards they had found a lode they had never expected. With all their misfortunes, they were still living, and were looking well, and although things were at present looking quiet, he trusted that they would soon get better. (Hear, hear.) Instead of looking as they had done, at every disadvantage, they should look at their vastly improved prospects for the future. He thought they were greatly indebted to the agents and managers of the mine. He had seen them labouring under very great difficulties, but he had always found them at their post of duty. He proposed that the best thanks of the shareholders be tendered them for their arduous exertions in working the mine.

This was carried with acclamation, and Captain GABBY returned thanks. The agents had always tried to do their duty. The prospects of the mine were as good as they had ever been, with the price of tin down, and the price of materials up. He considered that there were still better things in store for them in the future.

Capt. HOSKING also returned thanks. He considered that the prospects of the mine were never better than at present. He hoped to do better in the next two months than they had in the past.

A vote of thanks was proposed to the Chairman by Mr. WOOLCOCK, and seconded by Mr. ANDREWS, and Mr. DENNIS having replied, the meeting separated.

NEWFOUNDLAND MINING COMPANY.

A general meeting of shareholders was held at the London Tavern, on Tuesday.—Sir ALEXANDER MALET in the chair.

Mr. N. M. BYERS (the secretary) read the notice convening the meeting.

The report of the directors stated that the experience of every day satisfies them, more and more, of the great value of the property of La Manche Mine, which, in their belief, only wants a short time longer to develop into a handsome dividend. The winter which followed the completion of the purchase of the property was unexampled in severity, and it was not until January and April that the manager and captain of the mines arrived, so that practically nothing was done until May. Owing to the great interest which the Newfoundland Land Company are taking, by exploration, in the development of the mineral resources of their extensive property in the colony, and also to the opening of some other lead, copper, and nickel mines, by private individuals, there has been an increased demand for, and consequently a difficulty in obtaining, skilled mining labour. A favourable opportunity, however, recently occurred for sending miners to La Manche, of which the directors did not hesitate to avail themselves. On Sept. 5, 20 miners left Queens-town for St. John's, and arrived at the mine on the 20th, and on October 5, 20 more were forwarded per Austrian, Allanline of steamers, making 40 in all. These miners, previous to embarkation, entered into a legal agreement to serve the company for 12 months, at wages similar to those paid to the native miners. A cargo of ore reached Swansea from La Manche, at the latter end of August, which realised 3122l. 11s. 5d.; and the average value of the ore was 13s. 10s. per ton. And the following particulars received from the agents, Messrs. Richardson and Co., of Swansea, will show the extraordinary richness of the lead and tin ore, which the directors did not hesitate to avail themselves of. 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MINES, MINERS, AND MINERALS.

where the pump is more easily transported into mining districts, and even when it is considered desirable to send the pump all put together and ready for work, the consideration of the pump is made, and new parts substituted for those which have been worn out or injured, confer upon this mode of construction a superiority over all others. Where, from motives of false economy, the different parts are made in one piece, instead of being cast separately, fitted together and held by bolts and screws, the making of repairs is often difficult and expensive, from the fact that the working parts are hard to get at, while in the pump under discussion access may be easily had to pack by unscrewing a few bolts and nuts, shown at centre of water cylinder.

In an interesting lecture delivered at the Penzance Institute, by Mr. T. CORNISH, the lecturer remarked that he did not propose to lecture on mineralogy proper, but merely to say a few words on mines, miners, and minerals. Mineralogy was in itself an extensive subject, and for him to attempt to give a lecture on it in an hour or so (even if he considered himself qualified) would be simply impossible. The lecturer comprehended the unorganised mass of the globe, including the igneous, the sedimentary, and the metamorphic rocks, and even the minerals, and even the minerals. In its simple definition it was the science dealing with minerals dug from mines, and he would confine his remarks to some of the common forms of metallic minerals. The metallic minerals of Cornwall were tin, iron, lead, copper, and silver, and some specimens of gold had been found. Silver has been discovered in the eastern part of the county, and also at the Marsh, on the Eastern Green, which was principally disposed of as specimens. Gold had been produced at Bodmin Moors in the last century, sufficient to make a ring, which had been preserved to the present day. White tin had been produced at St. Austrey, and the lecturer referred to Mr. Emerson's efforts in its production. The presence of gold in Cornish quartz was shown by a sample. The great disimilarity of specimens containing the same metal was pointed out, and illustrated by many specimens on the table. There was copper produced from five different minerals, and iron was shown to exist in several forms—white, red, and black stone. Tin and tin pyrites were similar in appearance to silver, and silver and grey copper are alike. Then came the question as to how did it become known to the miners that these stones contained metals? We must go back to early times, and in Eastern countries it was found that the art of working metals was known. The superheating furnaces for smelting were of great antiquity, and it is certain that our ancestors frequently threw away 50 per cent. of iron dross in extracting tin. They early learnt the value of tin, whilst lodes of copper were disregarded. Metals were found in two forms. Gold was always found in a metallic form, and silver in the same way. Copper and tin came from ores, and iron and lead in their native form were very scarce—the latter rarely found. The tin found in stream works and in lodes was described. The lecturer referred to the curious old custom of using the dish when the lode's stream-work rent was paid; seven parts were for the adventurers' pile, and the eighth was for the lode's dish. The nature of lodes was then described, the lecturer stating that it was an error for people to think that a good lode constituted a good mine. A lode was a dyke of stone running at right angles, which sometimes ran for miles; those running from Hayle to Penzance were instances. A slice of pork between a portion of a loaf of bread was given as a familiar illustration of the position of a lode. The wall of a lode, the underlie, and other features in its formation were described, some of which were valueless for mineral. A lode may be 18 or 20 ft. wide, or it may be of very small proportions (samples of the latter being shown); it had also the peculiarity of being very irregular. The dip of the lode was also described. The working of a mine was shown by sections of Wheal Kitty, Wheal Margaret, and Providence (the last of which was kindly lent by Mr. S. Higgs, the owner). The shafts, adits, levels, their uses and how they were worked were clearly shown, together with the important operation of sinking winzes. The workings beneath the sea at Providence and Botallack, and the dangers to be avoided, were spoken of. How the metal becomes deposited in a lode is a difficult matter to solve, and about it there is much speculation.

The metals here (tin and copper) were found in the primary rocks, and there was no reason for thinking otherwise than that the process of metallic formation was going on now. Agencies were in operation, no doubt, for the production of metal, as being shown at Great Work, where a granite adit had contracted. At Boscawen there were large chasms to be seen. The extreme superincumbent pressure was driving out the walls laterally. Then how were these lodes found? There were two ways; one was practical and the other sentimental. The first was by costeaning pits and going down to find; the second was by dowzing, the dowzer being a person, it was considered (by the believers in the process) who was specially endowed with powers for the performance of the operation. The person so gifted takes an hazel rod between his fingers, and when it dips the presence of a lode is indicated. The lecturer, however, had never seen a lode found by this operation, but he had met with many persons who believed in its efficacy. The dowzers were considered men specially endowed with supernatural agency. The Cornish miners obtained many old superstitions, a belief in the presence of the spirits of the mine being one; the lecturer instancing the story of old Capt. Rutter going down a mine with a party of gentlemen, who cautioned them that whatever they did—they might dance or sing—but on no account should they swear or whistle. One of the best specimens of the genus *homo*, the lecturer considered, was the Cornish miner; but they had their peculiarities, amongst which were their hours of labour (from 30 to 25) during the week; and the method of taking wages by the tribute and tutwork system, by the former of which the miner became a speculator with the adventurers. Their amusements were peculiar, amongst which was that of wrestling. They never had to run the risk of endangering their lives by fire-damp, but were exposed to the danger of being overwhelmed by water, owing to the carelessness of their ancestors in not properly closing up and securing old workings. Their diseases were peculiar, and were contracted in the hot ends of the workings. At Wheal Clifford the thermometer stood at 98°, after working in which atmosphere the men lost from 6 lbs. to 8 lbs. in weight. Reference to the similarity of old Cornish mining terms to those of iron, to the laws relative to mining, and to the formation of crystals concluded the lecture.

ROCK BORING—DYNAMITE.

A number of members of the South Staffordshire and East Worcestershire Institute of Mining Engineers met at Messrs. Dixon's and Burne's limestone pit, at Dudley Port, to watch a series of boring experiments with Madermott's patent rock and coal perforator, and also experiments with dynamite as an explosive agent. The perforator was worked by Messrs. Elliott, of Birmingham, the representatives of the patentees, but on account of the failure of the drill they made no further progress in the limestone with two men than the man in the pit did single-handed with his hammer and chisel. Messrs. Elliott confessed that the limestone was the hardest rock they had ever met with, and that the perforator they had with them was not equal to the work offered them. The dynamite experiments, on the other hand, were very successful, huge pieces of limestone being smashed by the simple expedient of laying a cartridge of the dynamite on the top of the rock and firing it. These experiments were conducted by Messrs. T. and Henry Johnson, of Dudley. In the evening an ordinary monthly meeting was held in Dudley—Mr. William Blakemore presiding. A discussion took place on the experiments, and it was generally agreed that the perforator was invaluable in coal, binds, grey and green rock, but that the Dudley Port limestone—which was the hardest in the kingdom—was too much for a rotating drill. Upon the dynamite experiments, Mr. Cole said it had no doubt power, and was a valuable material, but there had not been holes enough bored for him to give a decided opinion on its relative merits with other explosives. Several members praised the invention very highly, and Mr. Henry Johnson, sen., said both the perforator and the dynamite had done good work at the Sandwell sinking. The drill with one man did 2½ inches more in 15 minutes than three men in the same time with double-handed punching. It was arranged that both machines should be exhibited at the next monthly meeting.—The Secretary (Mr. H. Johnson, jun.)

read a correspondence with a Mr. D. Jones, secretary to the Ironmasters' Association, on the subject of giving a prize for the best essay on the geology of the South Staffordshire coal field, with particular references to the present fault, indications, and existence of the Thick coal.—A discussion followed, but the speakers were against the proposal to spend money on such an essay, believing, as Mr. H. Johnson, sen., Mr. Hughes, and Mr. Spruce said, that the late Prof. Beete Jukes had done the work well years ago. In support of his argument, Mr. Henry Johnson, sen., read Prof. Ramsay's letter to the *Times* on the subject, which stated that a new 6-inch survey of the whole coal field was contemplated by the Government, and would be put in hand at once. Mr. Johnson combated the recent attacks made upon Jukes's survey of the district, and detailed the numerous new sinkings that had been carried out the last ten years on the confines of the coal field, and the fact that several hundred thousand pounds had been thus spent, he thought, was quite sufficient to show the lively interest that had been taken keep the coal field alive without expending 300 to 500 guineas in a prize essay.

COLLIERY PROPRIETORS AND THEIR MEN IN STAFFORDSHIRE.

The system which has prevailed for some time at the collieries in South Staffordshire of employing a larger number of colliers than the works actually require has grown up from the necessities of the case. The workmen have systematically neglected to work full time, and have thereby driven their masters to the necessity of taking on a larger number of hands than they can each day find employment for. This system has been well understood by the men, and such arrangements have been made as secured, when they have been fairly carried out, a distribution of the whole work amongst the pit's company. So regular has been the irregularity of the colliers that the managers of large concerns have been able to calculate exactly how many men in excess of what, under ordinary circumstances, would be a complete complement will be required to keep the workings going from day to day. The excess has varied in different parts of the district. We have heard it fixed as high as five men when work could be found for only four, and that difference has lessened down to one in ten above what should have been the actual requirements. If the masters had taken the alternative of this arrangement, and have engaged exactly only so many men as they had places for in the pit, they must have carried out the Masters and Servants Act rigorously, and have enforced the attendance of every man full time. The interest of the bulk of the workers, as well as his own interest, would have necessitated that the master should in that case have compelled every man to abide by his hiring. This, however, would have appeared to be a very harsh proceeding, and the discipline would have been as rigorous as that aboard ship. It can be hardly a cause of surprise that colliery proprietors have hitherto shrunk from the responsibility of being the prosecutors as well as the employers of their workpeople. Under such an arrangement there have, no doubt, been occasions upon which colliers willing to work full time, have been sent back home because it was their turn to stand by; but they knew perfectly well the reason why, and the circumstances under which the day's employment could not be provided for them.

We call attention to this subject because the masters have now received a direct challenge which must put them on the alert to protect themselves by carrying out the law. A case has arisen in the Dudley district in which a man under the ordinary 14 days' notice to quit his employment demanded to be employed for six whole working days—i.e., his full time—or to have his full pay; and he brought his case into the County Court there, and through his solicitor argued it before Mr. RUPERT KETTLE, the Judge. The pleading showed that a sort of sub-custom has sprung up whereby full time has been given to workmen when they have been under notice. There can be no reason, either in law or good morals, why men under notice should be treated differently to the other colliers in the same pit; but inasmuch as the workmen under notice could always raise the strict question of right, there has been a tacit understanding that whoever might be required to go back the men under notice must go down and have full employment found them every working day. In the case decided by Mr. KETTLE a man under notice had each morning attended at the pit and tendered himself to work, but he had only been taken on in his turn, according to the arrangements which we are discussing. He now claimed to be paid for his full time, for he had been willing to work and had offered himself to go down. By the colliery rules it appeared that a 14 days' notice was to be given on either side, unless from shortness of trade or other unavoidable causes no work could be provided. In that event the workman might leave, or he might be discharged without notice; but there was no shortness of trade in this case, nor did the masters succeed in establishing any unavoidable circumstances. Even if they had, it would only be a reason for determining the contract, and not a reason for omitting or refusing to find employment whilst the contract of hiring existed. They had, in fact, kept the man on as their hired servant during the fortnight, but had failed to find him regular employment during that time. Upon this the Judge held that inasmuch as the man was bound to hold himself at the service of the masters, and could have been prosecuted under the Masters and Servants Act for departing from his hiring, the master was reciprocally bound, and must, therefore, find the man work.

Now, therefore, that it has been declared authoritatively, and, no doubt, with respect to its strict legality properly declared, that where the man is bound to work for the master the master is bound to find the man employment, this system of mutual accommodation at the Staffordshire Collieries must be discontinued. The masters must enforce the law, and it will not lie in the mouths of the men to complain that the law is enforced. If the masters are forbidden to get substitutes they must rely upon the punctual attendance of each man to his work. We, too, rely upon it, and the public, who have shown so much sympathy with the men, will rely upon it. And if experience should prove that none of us can rely upon it then the masters must enforce the law. It becomes their duty to enforce the law, and the law is as strong to protect them in enforcing their part of the contract as it is to give the remedy to the workman against his employer. The general issue of a clear understanding upon this subject should be beneficial to both employers and employed. So long as there was a permissive laxity on both sides the men were permitted to indulge in habits of negligence altogether subversive of that discipline which is absolutely necessary to the safe and profitable conduct of a colliery. It is morally impossible to tell men of this class that they must play one day for their master and must not play another day for themselves. This loose practice, although not perhaps the whole cause, is yet one of the principal causes of the neglect of work, and consequent short time and diminished output, of which the masters complain so bitterly, and for which the country pays so dearly; and we feel sure that public opinion will support the masters when they do their duty, and enforce the law by which it is so entirely condemned.

PREVENTION OF ACCIDENTS FROM OVER-WINDING OR BREAKAGE OF ROPE.—Mr. W. S. UNDERHILL, of Newport, Salop, manufacturer, and F. J. SROW, of Shifnal, Enfield, have obtained a patent for certain improvements in apparatus to be used with cages for mines and shafts, for the prevention of accidents through overwinding or breakage of the winding ropes. They say—"In carrying out our said invention we attach two ordinary diagonal suspension chains to the winding rope or chain, and from these we suspend the cage. The supporting catches to which the said diagonal chains are attached are not permanently secured to the cage or other receptacle employed, but are held vertically in position at each side of the cage by means of latches turning upon horizontal pins, each latch having a handle or tail end projecting horizontally when in ordinary use. The guides between which the cage travels terminate at a suitable height above the mouth of the pit, and are furnished with strong bolts, which project in such manner as to catch and depress the tail ends or handles of the aforesaid latches, should the said cage be over-wound or raised too high. The catches are thereby set free from the cage, and pass away with the winding rope. In departing each catch lifts into a horizontal position an arm, which is hinged at its upper end to the said cage, and which, when it is in its ordinary vertical position, transmits the weight of the cage to the supporting catches. Each hinged arm has a stop to prevent it from rising above the horizontal line. Upon the said cage attempting to fall after the release of the supporting catches, and consequently of the winding rope or chain, the said horizontal hinged arms catch upon the top of the said vertical guides and support the cage in safety. In adapting our invention to prevent accidents from the breakage of the winding rope, we make each of the aforesaid supporting catches in two pieces, the upper piece being hinged to the lower piece. The upper piece has an

external hook or catch at its upper end, which, when the rope breaks, is forced by a spring into a gear with ratchet-shaped teeth formed upon the inner face of each guide bar, but as long as the rope or chain is unbroken, and the cage hangs therefrom, the tension of the diagonal suspension chains counteract the force of the spring, and holds the upper catches out of action."

NEW SAFETY-LAMP FOR MINERS.

Reference has several times been made in the *Mining Journal* to a new safety-lamp for miners, invented and patented by Mr. Marcus Israel Landau, of St. Mary Axe, and as a lamp upon the new principle has now been constructed a more conclusive opinion can be formed as to its merits. The wick tube is surrounded by three concentric chambers, one-half of the outermost of these being used as the oil reservoir. The remaining half of the outer chamber is perforated to admit air to the wire gauze or perforated metal with which the second chamber is protected, and to render direct communication between the external atmosphere and the flame impossible, the perforated metal connecting the second with the inner chamber is placed on the opposite side of the lamp from that which connects the outermost and second chambers. Similarly careful provision is made for the escape of the products of combustion, the top of the lamp being formed of a spiral plate of metal of conical form, and the perforations being provided only at the innermost and outermost ends of the spiral the heating of the outer perforations is prevented. There are several ingenious contrivances in connection with the locking and re-opening of the lamp which have been introduced with a view to prevent the exposure of the flame. Upon the axle carrying the wheel for elevating the wick there is placed a wheel which, upon the top of the lamp being unscrewed, is operated by a series of projections on the lamp top, and lowers the wick into the tube, thus extinguishing the flame. This axle is slightly moveable longitudinally, and the locking screw, which is about ½ in. diameter, is so placed that in locking the lamp it forces the axle forward, and throwing a pinion thereon into gear with a wheel permits of the wick being raised and lowered from the outside. It will, of course, be understood that whilst the locking screw is in position the lamp top cannot be unscrewed, and that when the screw is withdrawn the movement of the wick cannot be effected from the outside, nor can the extinguishing of the flame by the action upon the turning wheel of the projections in the lamp top be prevented.

With regard to the general action of the lamp, it is explained in the specification that the mode in which the lower portion of the lamp is arranged is such that the flame only draws just sufficient air for combustion at the lower part of the lamp, and if there be a rush of inflammable gas or fire-damp in force the flame would be extinguished. Moreover, it is continued, by this arrangement, the entry of air or gas from the outside at the upper part of the lamp is prevented, no air being drawn in at that part to feed the flame, and thus the danger of admission of deleterious gas is prevented; there are man-holes for cleaning the chimney.

The various arrangements included in the invention may, Mr. Landau considers, be applied to furnaces, fire-places, and apparatus for heating, especially for maintaining heat and combustion, securing safety, and preventing the evolving of noxious or deleterious vapours. The arrangements may also be applied for ventilation. In the lamp experimented with by Mr. Landau, at the *Mining Journal* Office, he demonstrated that the flame was instantly extinguished by the admission of gas through the perforations below the level of the flame, and that no effect whatever was produced by bringing the gas into contact with the lamp top; therefore explosion in a mine where such a lamp is used would be impossible.

INDUSTRIAL DEVELOPMENT—WHITLEY PARTNERS.

After 29 years of success as a private undertaking the well-known business of Messrs. WHITLEY PARTNERS, mechanical engineers and export merchants, is about to be converted into a public company, and from the terms upon which the transfer is to be effected it is considered that the profits to be realised by the shareholders of the new concern will even exceed those which have been earned by the private firm. The object of the conversion is to permit the senior partner, who founded the business in 1844, to retire from active engagements requiring his personal care, and also to render available a larger capital now required, owing to the leading branches of the trade having become so developed. It is mentioned that the works are in a thorough-going order, are actively employed on contracts of a profitable nature; and that, judging from the earnings of past years, a net profit of 15 per cent. may fairly be anticipated, with every prospect of a considerable increase. The valuations of the stock-in-trade, plant, machinery, buildings, and land have been made by Messrs. Edward Field and W. Lloyd Wise, and an independent valuation of the whole concern has also been made by Dr. Farr, R. & S., who estimates its actual value on Jan. 1 last, inclusive of the goodwill (which is valued at under three years' purchase), but exclusive of all patents, rights and licences, except Allen's governor and Peet's valve, at 126,000l.; yet the purchase of the whole of the real estate, buildings, plant, machinery, stock-in-trade, goodwill, English and foreign patent rights, licences, agencies, and contracts in hand, as a going concern, as it stood on Dec. 31 last has been effected for 100,000l., payable one-half in cash, by four instalments extending over twelve months, and the remainder in fully-paid shares, which are to receive no dividend in each of the first three years unless and until the sum available in each of those years shall amount to at least 7½ per cent. on the shares held by the other shareholders. It has been wisely determined to keep the management and working staff as nearly as possible upon the same basis as at present. Mr. Joseph Whitley, the retiring partner, will occupy a seat at the board, and Mr. John R. Whitley, the active member of the late firm, will join the board as managing director for a term of years; the services of the chief clerk and the staff of travellers and clerks of the late firm have also been secured for periods of from three to five years, so that the transfer will not interfere with the business of the concern. It is proposed, moreover, in connection with the extension of the business, to adopt the well-matured plan Messrs. Whitley Partners had in contemplation—to open branch offices and warehouses in London, Berlin, and Moscow, in order that the company's manufactures, already well known there, may be properly represented.

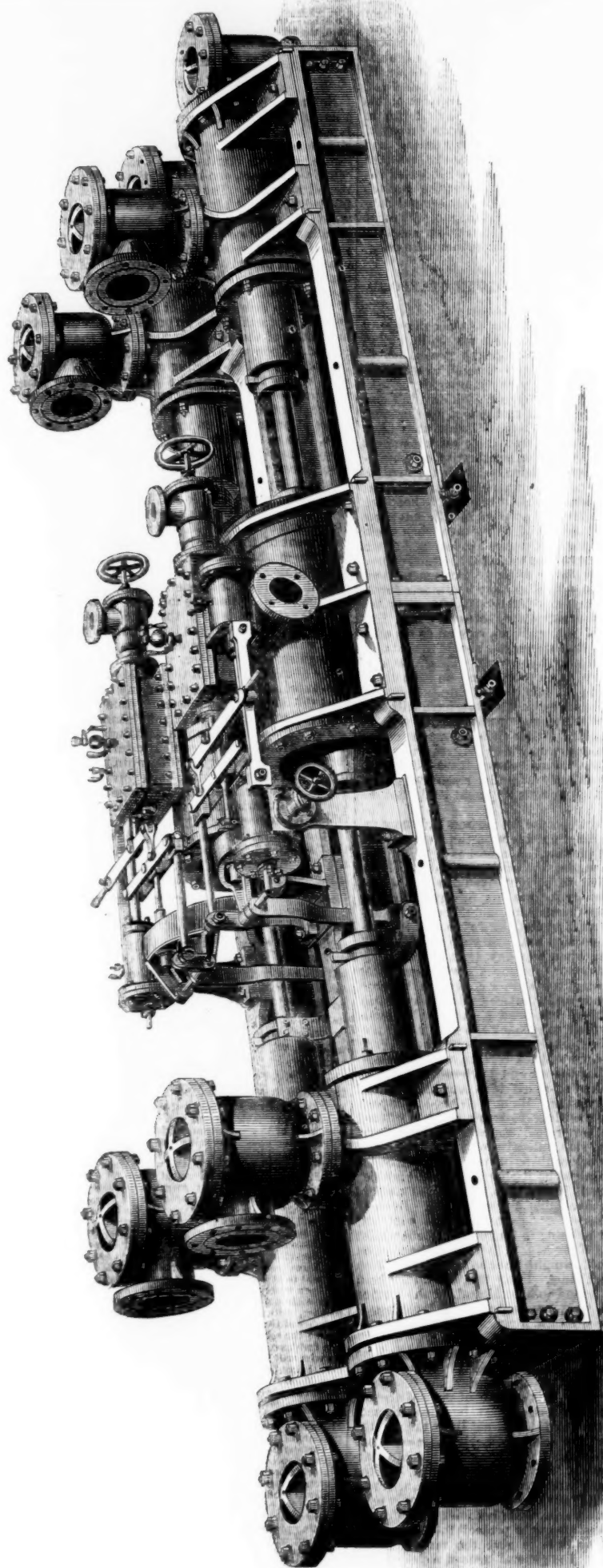
With regard to the business itself it is described as consisting of three distinct branches, each materially aiding the other. The brass foundry and finishing department has produced some of the largest castings ever made, and is now capable of turning out castings up to 15 tons weight each, such as ships' sternposts, prows, screw-propellers, working barrels, bells, engine brasses, &c. The mechanical engineering branch of the business enjoys the exclusive monopoly for the whole of Europe of several patented inventions of great utility, having for their object a material economy in the heavy costs of fuel and manual labour. The success of this branch of the business is carried beyond the pale of speculation by the fact that several of these specialties have for some time past commanded a steadily increasing preference over all others, both in Great Britain and on the Continent, amongst which are, the Allan governor for stationary, marine and portable engines, and Peet's valve for steam, water and gas pipes, and large mains. As exporters of machinery and general hardware merchants the company will have the nucleus of a very extensive trade, and as examples of the scope offered by this branch of the business it is mentioned that negotiations are pending for the fitting up complete of a small arms factory with the requisite machinery and fixtures for one of the foreign Governments and also for the fitting up of some iron and steel works on the Continent for the manufacture of Bessemer steel. It is pointed out that the general business of the company is not one of a speculative character; the goods manufactured or sold by the firm are so various and the connection so large that the ordinary fluctuations of trade are practically counterbalanced; indeed, from the nature of the business transacted by the three departments the company is not likely to be without an abundance of orders, for in times of "dull trade" employers of labour and users of steam-power turn their attention especially to labour-saving machinery and improved appliances for the economising of fuel. The customers of the late firm comprise the English and foreign Governments, also many of the principal railway, gas, and water companies, corporations, landowners, engineers, shipbuilders, ironmasters, colliery proprietors, millowners, merchants, ironmongers, &c., in all parts of the world.

Considerable importance is attached to the practical experience of the managing director, who has resided many years on the Continent, and possesses a knowledge of foreign languages, and it is added that his being aided by a staff which includes several technical foreign correspondents and travellers will enable the company to conduct their business abroad direct with the continental firms. The extent to which Allen's governor and Peet's valve are used is generally known, but the company will also take over many other inventions which have been rapidly growing in favour; amongst these are Berryman's feed regulator and feed-water-heater for boilers, Crossley and Hanson's self-acting reducing valve, Field and Cotton's direct expansion compound steam-engine, Hanson's variable expansion gear, Smyth's motor for driving sewing and other machines, the "Best" steam boiler (Hanson and Norton's patents), and the "Victoria" steam pump. The firm has always been very successful in obtaining prizes at the various industrial exhibitions at which their goods have been shown, and the award just received at Vienna of the Medal of Merit, "for excellence in material and workmanship, the employment of improved tools and machinery, and the opening of new markets"—cannot fail to ensure a high opinion as to the prospects of the company.

TIN-PLATES.—Mr. T. F. PARSONS, of Maindee, chemist, has patented an improved process of cleaning and polishing tin and other plates. He says—"I take the plates after their immersion in oil, and dip them in a bath of hot alkaline water. Then the said plates are passed through a polishing machine, which gives them a brilliant finish. During the operation of polishing the plates the said rollers are supplied with bran or other suitable polishing substance."

LONDON GENERAL OMNIBUS COMPANY.—Traffic receipts for the week ending Nov. 9, 1873, 14s. 1d.

RECENT IMPROVEMENTS IN PUMPING ENGINES FOR MINES.



RECENT IMPROVEMENTS IN PUMPING-ENGINES FOR MINES.

At a recent meeting of the Society of Engineers an interesting paper on this subject was read by Mr. HENRY DAVEY, with the view chiefly of bringing before the society two recent modifications in pumping machinery. In doing so he purposed to touch upon some important points connected with pumping-engines generally. In designing pumping machinery for mines, as also in designing steam machinery of all kinds, the three great questions which should be thoroughly and relatively considered are—economy of fuel, economy of maintenance, and economy of construction. After briefly directing attention to these questions, the author proceeded to describe the new pumping-engines for pit and dip workings, which were illustrated by models, drawings, and photographs. The importance of economy in fuel was never more keenly realised than at the present time, notwithstanding the great advances which have been made to reduce the consumption. Our steam-engines consume annually 37,000,000 tons of coal, which at the present moment may, perhaps, be reckoned at 15s. per ton, representing over 27,000,000,000 sterling; an economy of 25 per cent. would, therefore, effect a saving of nearly 7,000,000,000 annually. In Cornwall the cost of coal has, ever since the introduction of the steam-engine into that county, been a subject of vital interest to the mining community, and in a period of 20 years the improvement effected in the Cornish pumping-engine reduced the consumption of coal to one-third that at first required, making a saving of 90,000,000 per annum, which, at the present price of coal, would amount to 140,000,000 sterling. Whilst the engineers of Cornwall were thus perfecting their engines and developing the principle of expansion, colliery proprietors could well afford to be

careless on the matter, but the time has now arrived when coal which can be used for steaming purposes in collieries meets with a profitable sale for other uses. Besides this, our coal mines are being worked deeper and deeper every year, so that the proportionate amount of pumping necessary for a given "output" is greatly augmented. At a coal pit in the North of England, where the author is now putting down plant, the weight of water pumped to the surface in draining the workings will be nearly four times as great as that of the coal raised. With such enormous proportionate amount of pumping it is not unusual to find a consumption of from 12 lbs. to 16 lbs. of coal per horse-power per hour. A good compound engine will work with less than one-fourth that amount of fuel. The saving, therefore, to be effected on 400-horse power of actual work by the substitution of a compound engine would be at the lowest estimate 35 tons in 24 hours, which, taken at 5s. per ton at the pit's mouth, would amount to the modest sum of 2700, per annum. The old 400-horse power engine, consuming about 50 tons of coal per day, would weigh, probably, from 50 tons to 100 tons, if a single-acting engine, as many are, whereas a compound engine of the same power, which the author will presently describe, weighs only about 55 tons.

The author is now constructing one of these engines to replace an old one, engaging that it shall consume only one-fourth the fuel now used. It is well known that the leading principle of economy in the steam-engine is that of expansion of steam, and the introduction of the second cylinder to form a compound engine gives no theoretical advantage, but is purely a practical question. By the introduction of the second cylinder the maximum strain thrown on the piston and its attachments is greatly reduced, and a greater uniformity of motion and of strain is secured. In the example before

us the variation of force during the stroke is about three to one, with an eightfold expansion, whereas with a single-cylinder engine it would be as eight to one. In Cornwall some years ago, during the race for economy of fuel, engineers carried expansion in a single cylinder to the utmost limit; Taylor's 85-in. Cornish engine, having a 10-ft. stroke, was worked at the United Mines with a tenfold expansion, and did a duty of 112,000,000, but it ultimately broke down from the excessive strain thus thrown on the pump-rod. Since then a lower and safer grade of expansion has been employed. This engine proved that which has been proved over and over again—that such a grade of expansion cannot be safely employed in a single-cylinder engine. Cornish engines are now worked with a single-cylinder, and at most a fivefold, expansion, and this partly accounts for the falling off in the duty reports. Experience has proved that the second cylinder is necessary where expansion is carried to a great extent. The author would here remark that the practice of recording the duty which has been carried out in Cornwall might be advantageously adopted in the colliery districts, but the report should be more complete than those of Cornwall, and should give the grades of expansion and the boiler pressure employed, besides separating the duty of the boiler from that of the engine. Thirty years ago the average duty of pumping-engines in Cornwall was 67,000,000, whereas now it scarcely reaches 48,000,000, and it is a great pity that the duty reports have not recorded the grades of expansions, for then we should probably be able readily to discover the cause of the falling off in efficiency. There are two types of the differential expansion pumping-engine—the single cylinder and the compound engine—the designs and arrangements of each being varied to suit different applications. On the screen Mr. Davey showed drawings of a compound engine now being constructed by Messrs. Hathorn, Dine, and Campbell, of the Sun Foundry, Leeds, for the New Hartley Colliery, in the North of England; and he also exhibited photographs of a pair of single cylinder engines at the Clay Cross Colliery, and of a pair of similar engines at Newton Cap Colliery, which have been made by the same firm. It will be seen that the compound engine consists of a pair of horizontal cylinders placed end to end, the bottom of the high-pressure cylinder forming one of the covers of the low-pressure cylinder. There are two piston-rods to the low-pressure piston which pass through two cast on the jacket of the high-pressure cylinder, so that they are in the same plane with the rod of the high-pressure piston. These three rods are coupled to one crosshead, to which is attached the connecting-rod for working the pumps. The cylinders are firmly secured to a strong girder-bed, and the condenser is carried on a separate bed at the rear of the engine. The air-pump bucket being worked by means of a tail-rod from the low-pressure piston, such is the simple form of the engine, but the valve gear, though equally simple in construction, is more difficult to describe without the aid of the model which lies on the table.

The main slide valve is actuated by means of a lever, deriving its motion partly from the main and partly from a subsidiary piston. The connection to the main valve is in the centre of the lever, and the connection to the two pistons at the opposite ends. The action will be best understood by assuming the main piston to be at rest at one end of the cylinder; to start the engine steam would be admitted to the subsidiary piston, causing it to carry the lever forward, opening the main valve, admitting steam, and thereby causing the main piston to complete its stroke; but this piston in doing so moves the main lever in the opposite direction, and cuts off steam. The main valve then has a differential motion, compounded of the motions of the main and subsidiary pistons. The motion given by the subsidiary piston is rendered constant by means of a double-acting catract, which the author will presently describe. The catract end of the lever has a constant motion, independently of the engine itself, and the other end has a varying motion, depending on the varying motion of the main piston. The resultant motion of the main valve being obtained from the centre of the lever, and being compounded of a varying and a constant motion, must necessarily also vary; variations of load on the engine produce variations in the motion of the main piston; in other words, the increase or decrease of load increases or diminishes the supply of steam to the cylinder. The catract end of the lever is attached to the subsidiary piston-rod, which rod is continued into the catract, and is provided with a gun-metal piston fitting the catract cylinder; the cylinder is filled with water, and is provided with a passage leading from one end to the other; in the passage is fitted an adjustable plug for regulating the speed of the engine. It should be understood that the force acting on the subsidiary piston is far greater than that required to move the slide-valve, the surplus power being absorbed in driving the fluid in the catract through a small opening. As the resistance of the fluid increases with the square of the speed, it requires a very great variation of force on the subsidiary piston to cause a very small variation in the speed, so that the speed is practically constant for a given adjustment of the catract plug, although the boiler pressure may vary. It will, therefore, be seen that the chief peculiarity in the invention is the simple manner in which the engine is rendered safe in working against variable loads, automatically and instantly varying the distribution of steam with every minute increase or decrease of resistance. A slight pause is produced at the completion of each single stroke of the piston, during which time the pump-valves fall to their seats, preventing slip and the shock which occurs when pump-valves close under pressure from a moving plunger. The freedom from shocks in the pumps is an important point, as it affords security against accident, such as bursting pipes, &c., and the durability of the valves and seats is greatly increased. The action of the valve-gear of the engine is so sensitive and so perfect that the load may be greatly varied on the engine when it is in full work without any injurious effect. Engines on this plan may be employed to pump direct into town mains without the intervention of stand-pipes, balance-valves, or anything of the sort. There is great economy in the construction of these engines, and in the buildings which they occupy.

The single-cylinder engines are in use underground, and are employed in pumping the water direct to the surface. The pair at the Clay Cross Collieries pump against 1000 ft. head of water, whilst those at Newton Cap have 240 ft. This method of pumping in collieries is becoming very usual, and where there is no chance of the engine being flooded it is probably the best, and certainly the most economical, plan as regards first cost. The construction of these engines is similar to that of the compound engine, minus the high-pressure cylinder. The compound engine just described is placed above ground, whereas these engines are placed below, and are self-contained on one bed-plate, with the pumps.

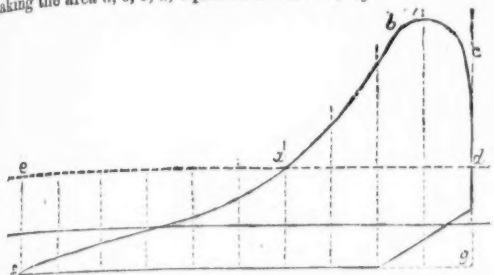
The photographs show no condensers, although the larger pair of engines is provided with one. It is not, however, a part of the engine, but is entirely distinct, the air-pump being worked by means of a small hydraulic engine from the pressure in the main column. In a more recent design the author has put the air-pump on the bed with the engine, and worked them by means of a tail-rod from the main piston, the pumps being both placed in front of the cylinder, with a plunger common to both barrels. Very severe tests have been imposed on the differential expansive engine by suddenly throwing off the load when the engine is in full work, with the stop-valve wide open; this has been done with impunity; there is, therefore, security against accident resulting from the breaking of a spear, the failing of a pump pipe or a valve—fruitful sources of breakage in with the ordinary pumping-engine.

Dip workings in mines are not easy, and are very expensive to drain by means of pumps driven from the main rods, especially where the dip is but little, nor is it always possible or expedient to use a steam-pump. The pump may be flooded, and thereby rendered useless, making it necessary to put down other means of getting out the water. To meet these difficulties the late Messrs. Carruth, Marshall, and Co. introduced the hydraulic pumping-engine. These engines are now made by the firm before mentioned, and consist briefly of a hydraulic direct-acting engine and double-acting pump. The mode of application may thus be described:—

The engine is placed at the bottom of the dip, a supply pipe is carried to it from the main column, and the delivery pipe from the pump is led to the main sump. The construction of the engine will be readily understood from the drawings and the model. These en-

engines have been fixed in various collieries. The diagram, taken by Mr. Howe from one of the engines at the Clay Cross Collieries shortly after it was put to work, shows that the engine did 80 per cent. of the theoretical duty. The dip became flooded from an accident, and the engine was under water for two months, but it continued working the whole of the time, although it could not be seen. For general purposes requiring motive-power underground there is a wide field for the employment of water pressure from the main column or from the tubbing, and the use of the hydraulic dip pumping-engine seems a step in the right direction. In whatever way the supply to the engine is secured, whether from the column or from the tubbing, an equivalent of work is added to the main pumping-engine. If all the various underground work were done by hydraulic engines, the main pumping-engine would necessarily require increased power proportionate to the work done by these engines. The author does not see any great obstacle to the practical application of hydraulic engines for hauling purposes as well as for pumping, thereby dispensing with all boilers and steam pipes in the pit.

In the former part of the paper the author contended that there are difficulties encountered in using steam very expansively in non-rotative engines which render the adoption of the compound system expedient, if not imperative. Other reasons besides those already advanced may be brought forward. Subjoined is sketched a diagram taken from a Cornish engine. The line drawn horizontally through the diagram cuts the expansion line at the point of average pressure, making the area a, b, c, d , equal to the area a, e, f .



It is evident that if the diagram was produced by a constant force overcoming a constant resistance it would take the form of the parallelogram, a, f, g, d , but under such circumstances the steam would not be expanded. In the Cornish engine the load lifted is a constant quantity, and that steam can be at all expanded on the piston is due to the fact that the moving load is a mass of matter, and not merely an opposing force. The expansive force of the steam can be utilised because the mass, in being changed from a state of rest to that of quick motion, absorbs or stores up an amount of energy which is expended during the second change from quick motion to the former state of rest. In other words, during the first change energy, represented by the portion of the diagram, a, b, c, d , is accumulated, and this energy, which is also represented by the area, a, e, f , is during the second change expended. The energy of the mass equals $\frac{Wv^2}{2g}$, and the energy represented by the area, a, b, c, d , equals the mean pressure of that portion of the diagram multiplied by the distance, a, d , and the resultant multiplied by the area of the piston, making in the present example 150 foot-tons. It is evident that the energy of the mass must equal this energy to produce the diagram; it is also evident from the above formula—viz., $\frac{Wv^2}{2g}$, that at about 500 feet per

minute piston speed energy = W ; therefore, to produce the diagram the mass to be set in motion at about 500 feet piston speed must be 150 tons. The author knows that to be about the weight of the moving mass in the practical example which he has selected. The load on the piston is not more than 50 tons, and if the engine had no mass to set in motion beyond the column of water to be lifted, the required velocity of that mass necessary to give it the required energy would be beyond all practical limit. On the other hand, if the velocity of the mass is limited to 4 feet per second, then the required mass would be about 600 tons, although the expansion is only about 6 to 1.

If this engine were to be made double-acting, and employed to lift water on the steam-stroke, it would be expedient, for practical as well as theoretical reasons, to limit the piston speed to 4 ft. per second, making it necessary, as the author has already shown, to provide a moving mass of 600 tons, but with the compound engine working under similar conditions only a very small moving mass would be necessary, because the variation in the effective pressures during the stroke would be comparatively very little. An expansion of four times in a single cylinder would give a variation of 4 to 1, but in a compound engine only 2.28 to 1. The reasons for this are obvious. The Cornish engine is a very costly machine; it is only single-acting, and it requires a great moving mass to make it practicable to employ a high degree of expansion, nor can it be made double-acting without either making it necessary to increase the mass beyond a practical limit or to employ a low ratio of expansion, involving a great waste of fuel. To meet these difficulties the author has produced the compound differential expansion engine, in which expansion may be carried to a great extent, with a piston speed not too great for actuating pumps during both strokes, nor requiring a heavy moving mass, making it practicable to secure economy of fuel with a comparatively small outlay of capital. The following description of the differential valve gear will make its action clear:—The main slide valves receive their motion from a lever to the centre, to which they are connected. This lever receives two motions, one at the end derived directly from the main moving parts of the engine by another lever of the first order, which, receiving the full motion of the piston at the long end, imparts from its short limb to the end of the level the amount of motion suitable to the working of the valve, and another motion derived from a subsidiary piston. This subsidiary piston receives its motion from the steam in the main slide chest by means of a small valve, and gives motion to a cataract piston working in a cylinder filled with water, which escapes from side to side through small openings, that can be regulated at pleasure by means of the valve. This cataract regulates the speed of the piston, and, consequently, the motion of the end of the lever to which it is attached. The valve admitting steam on the subsidiary piston is actuated by means of a lever, to which it is attached, and this lever receives motion from the lever by a connecting link. When it is required to start the engine motion can be given to the valve by removing the pivot of the lever, and moving the lever by hand.

The action of this gear upon the motion of the engine will be best understood by an illustration:—Suppose the main piston to be at rest at one end of the cylinder, then to start the engine steam would be admitted by hand into the subsidiary cylinder, and motion would be communicated to the valves, and the engine would commence its stroke; as it moves, however, it is giving motion to the lever in a contrary direction to the motion communicated by the subsidiary piston, and cuts off the steam. The main valve, therefore, has a differential motion compounded of the motion derived from the direct action of the main cylinder and an opposite motion from the subsidiary piston. Now, the motion of this subsidiary piston is rendered constant by means of the cataract. Seeing, then, that the cataract end of the lever has a constant motion independent of the engine itself, and that the other end must needs have a varying motion depending on the varying load on the engine, then the resultant motion of the main valve being taken from the centre of the lever and compounded of a varying and a constant motion, must also vary with every variation in the motion of the main piston.

MOTIVE-POWER FROM RUNNING WATER.—The invention of Mr. J. BRAGG, of Aston, near Birmingham, consists in so constructing and arranging under-shot water-wheels, and appliances connected therewith, that the maximum, or nearly maximum, amount of motive power is obtained from streams having but little fall. According to this invention the stream is confined, where practicable, to a channel having an inclined bottom equal to the fall in the stream, and in the said channel and at a short distance apart a series of under-shot water-wheels are arranged one above the other, the axes of the several water-wheels being supported

on the top of the walls of the channel. The water passing down the channel after acting on the first wheel, passes to and acts on the second wheel, and so on. The several water-wheels are connected together by toothed or other gearing, so that their combined power may be transmitted through the axle of any one of them to the required point. They are also provided with clutches, whereby they are capable of being readily geared to or ungearred from one another. When a brick or other artificial channel is not employed, the water-wheels and gearing are carried by supports built in the bed of the stream.

SILVER ORES, AND THEIR MODES OF REDUCTION—No. II.

BY W. T. RICKARD, F.C.S.

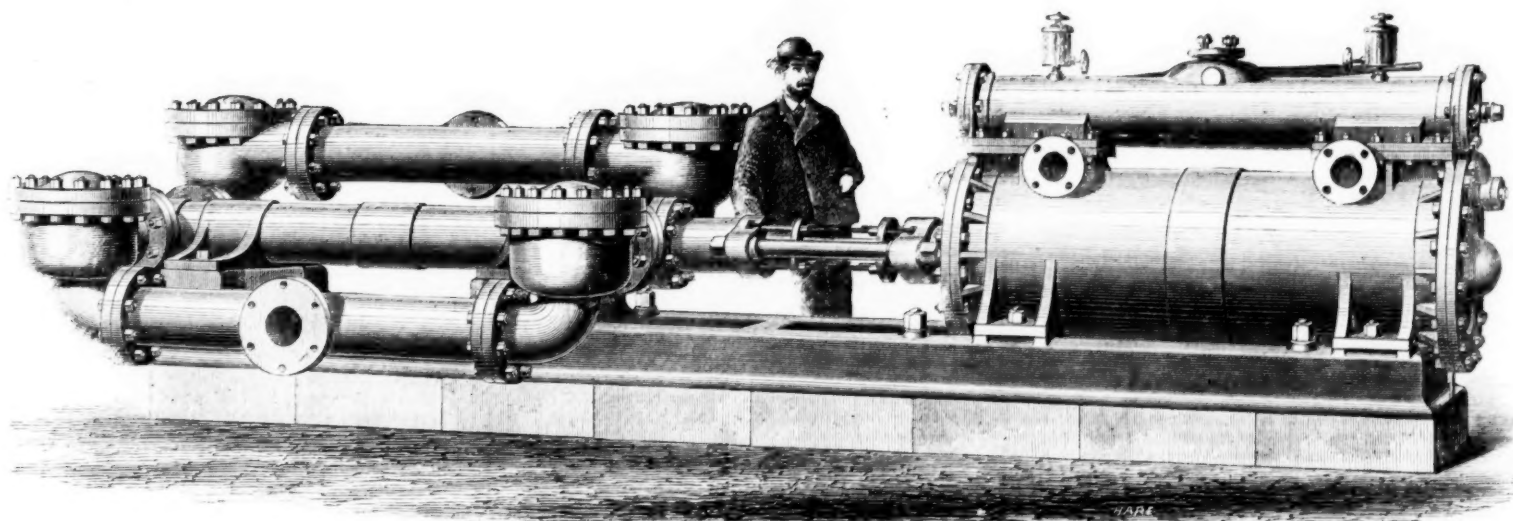
When amalgamation has been completed, which is known by the thickening of the mercury, which is examined from time to time, the contents of the circo are drawn off into large vats or settlers, where the amalgam subsides during a gentle agitation, accompanied by a stream of water, which gradually carries off the tailings, or *relaves*, as they are termed by the Peruvians and Chilians. The excess of mercury is then strained through chamois leather or linen bags, and the amalgam distilled under the caparuse (or bell), by which the mercury is collected, *per descensum*, in a vessel of water under the hearth. The loss of mercury by this barbarous system of distillation is only equalled by the loss in amalgamation. The aggregate loss, as admitted by Peruvian miners, is 1 lb. of mercury to each marc of 8 ozs. of silver obtained by this process.

As these Peruvian ores contain much sulphide of silver, like those of the Comstock lead, I may here describe the rationale of the process by which the unroasted sulphide of silver is reduced through the agency of sulphate of copper, salt, and mercury. The salt and sulphate of copper decompose each other, proto-chloride of copper and sulphate of soda being produced, while the metallic silver present, or reduced by electro-chemical action, decomposes the proto-chloride of copper, and by reducing it to the condition of sub-chloride, is itself converted into the chloride of silver. The sub-chloride of copper thus formed reacts on the sulphide of silver, forming sulphide of copper and chloride of silver—the mercury, in its turn, acts on the chloride of silver, forming sub-chloride of mercury, while the liberated metallic silver combines, as an amalgam, with the excess of mercury. The indispensable condition of chlorinising the silver is thus complied with through the friendly intervention of sulphate of copper, which acts as an intermediate agent in transferring chlorine from the sodium to the silver, so as to allow the latter to amalgamate with the mercury.

The process now in operation in Nevada and other places, although conducted on the same chemical principles as that of the patio, is a gigantic move in the right direction, although much remains to be done before we can escape the reproach of throwing away 30 per cent. of our precious metals. By amalgamating in iron vessels instead of on paved floors, we have reduced the loss of mercury, and consequently amalgam, to a mere fraction (about 1 lb. to a ton of ore operated on). [I will venture here to call attention to my



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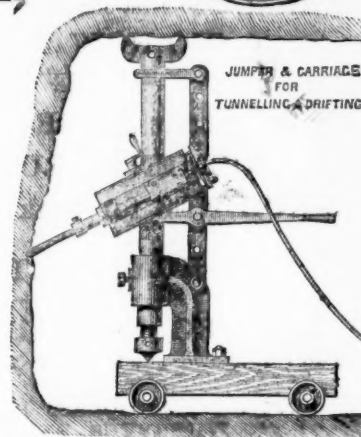
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Patterdale, near Penrith, October 2nd, 1872.

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GREENSIDE MINE COMPANY,

(per T. TAYLOR.)

FROM CAPT. HENRY TYACK, M.E., EAGLE BROOK MINE,

CARDIGANSHIRE.

Eagle Brook Mine, December 27th, 1872.

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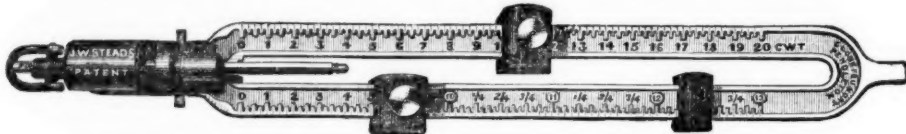
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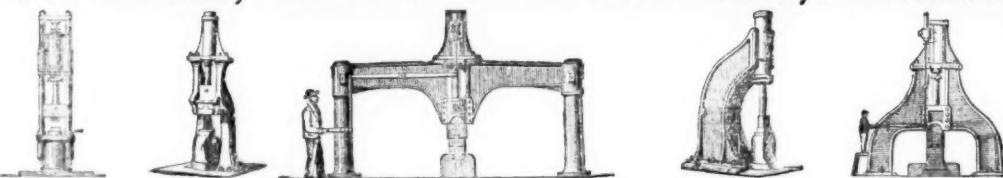


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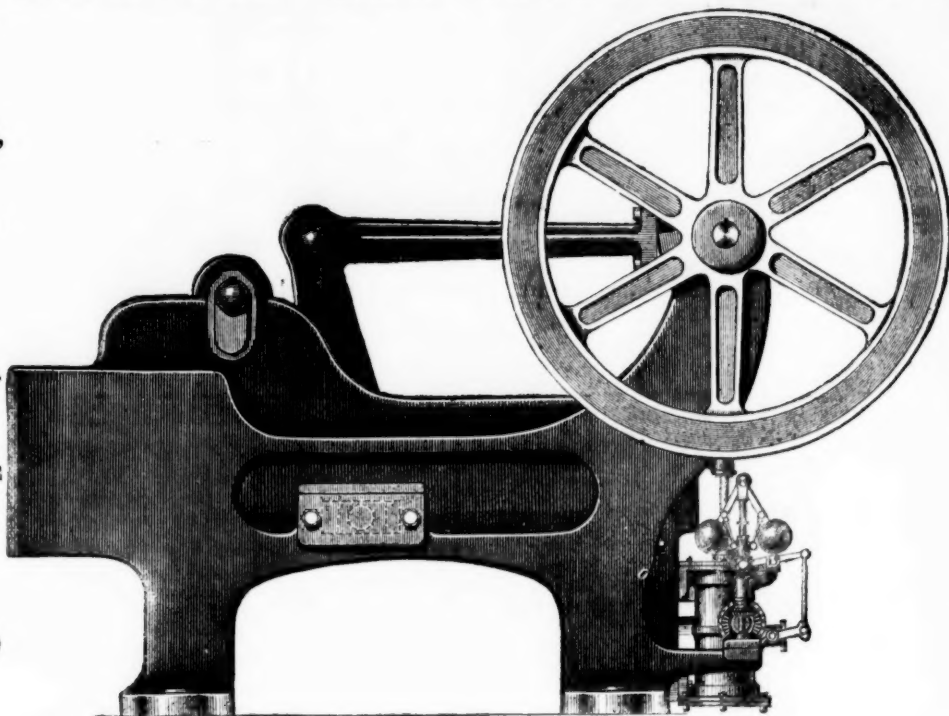
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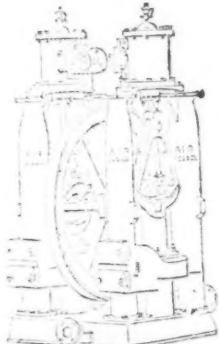
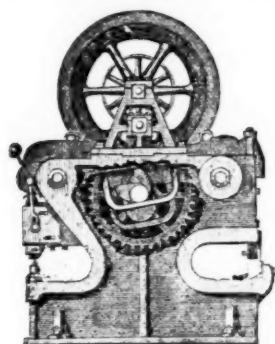
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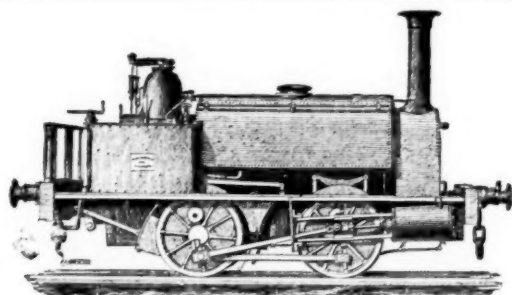
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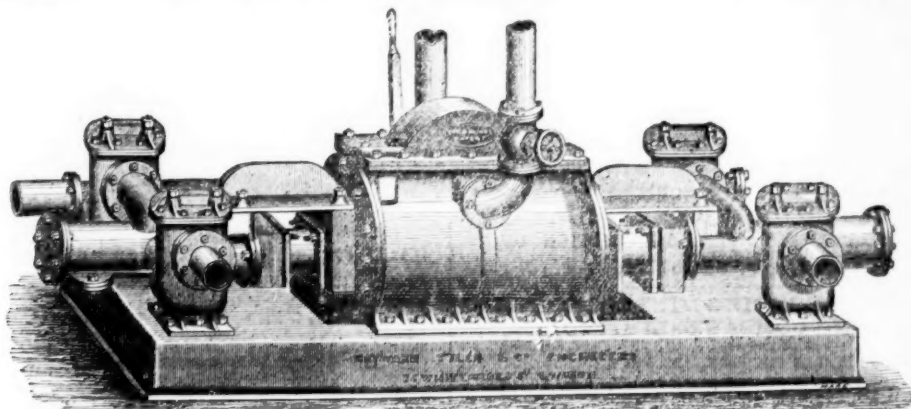
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